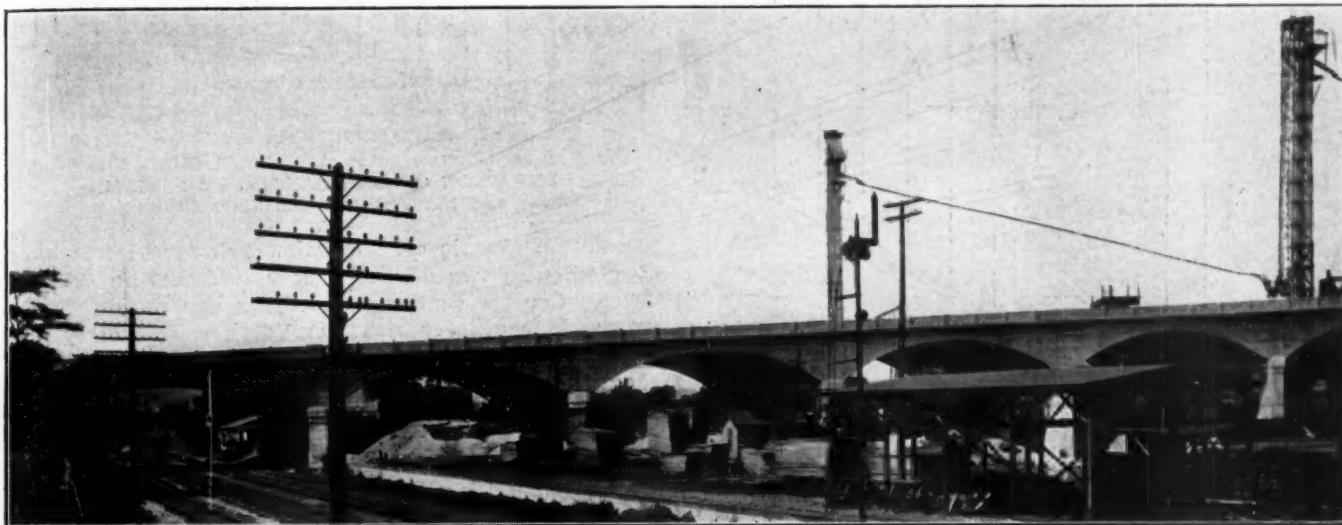


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WEST END OF HOPPLE STREET VIADUCT, COMPLETED.

THE HOPPLE STREET VIADUCT, CINCINNATI

Reinforced Concrete Construction Throughout—Carried by Four Lines of Balanced Cantilever Beams Having the Appearance of Continuous Arches—Principles of Design—Materials and Methods of Construction

Cincinnati, Ohio, is engaged in eliminating several grade crossings from the proceeds of a bond issue of \$800,000 which was authorized to be used for this purpose by a vote of the people in 1910. One of the structures erected for this purpose is known as the Hopple Street Viaduct. This will eliminate the crossing at grade of Hopple street over the tracks of the Baltimore & Ohio South Western Railroad. The estimated cost of this entire improvement, exclusive of property and damages to abutting property is \$420,000, of which the city pays two-thirds and the railroad company one-third. Work was started in April, 1914, and is expected to be completed early in the spring of 1916.

This viaduct extends from Meeker street westwardly along Hopple street to Beekman street, a total distance of about 2,100 feet. It crosses above Spring Grove avenue, the tracks of the B. & O. S. W. R. R., Mill creek and the tracks of the C. H. & D. R. R. At the east end of the viaduct additional approach facilities will be provided by the extension of Meeker street, with a width of 60 feet, south from Hopple street to Spring Grove avenue; also by the widening of Hopple street, from Meeker street east to Colerain avenue, from the present width of 40 feet to 70 feet.

The viaduct proper is 1,930 feet long and 60 feet wide. It consists of a 46-foot roadway and two 7-foot sidewalks supported on arches and approach embankments. The end approaches are earth fills retained by counterfort re-

taining walls. Two street railway tracks, spaced 10 feet 2½ inches between centers, will occupy the center of the roadway. Beginning at Meeker street, the viaduct ascends a 2.7 per cent grade for 905 feet; then it ascends at a 0.56 per cent grade for 515 feet, and thence descends to Beekman street at a 2.7 per cent grade. The roadway is paved with wood blocks laid on a 1-inch sand cushion. The sidewalks are of concrete. Both sidewalks and roadway slope toward gutters which drain through storm water inlets into cast iron pipe carried down the piers and discharging into the sewer.

DESIGN.

The viaduct is of reinforced concrete construction throughout. At the end of each approach is a concrete retaining wall, and between these there are 26 piers spaced from 65 to 80 feet apart and skewed with respect to the viaduct center line at angles varying from 59 degrees 20 minutes to 77 degrees 53 minutes. The floor system is of slabs and cross beams and is carried by four lines of longitudinal cantilever girder beams. These cantilever beams have the appearance of continuous arch ribs; but each pier with its adjacent cantilever beams (each beam forms the half of an arch) forms a separate and distinct structural unit. The two cantilever beams which appear to form an arch are separated by a transverse expansion joint which is carried completely through the structure, including the railings as well as the roadway.

The cantilever beams carried by any one pier are all of

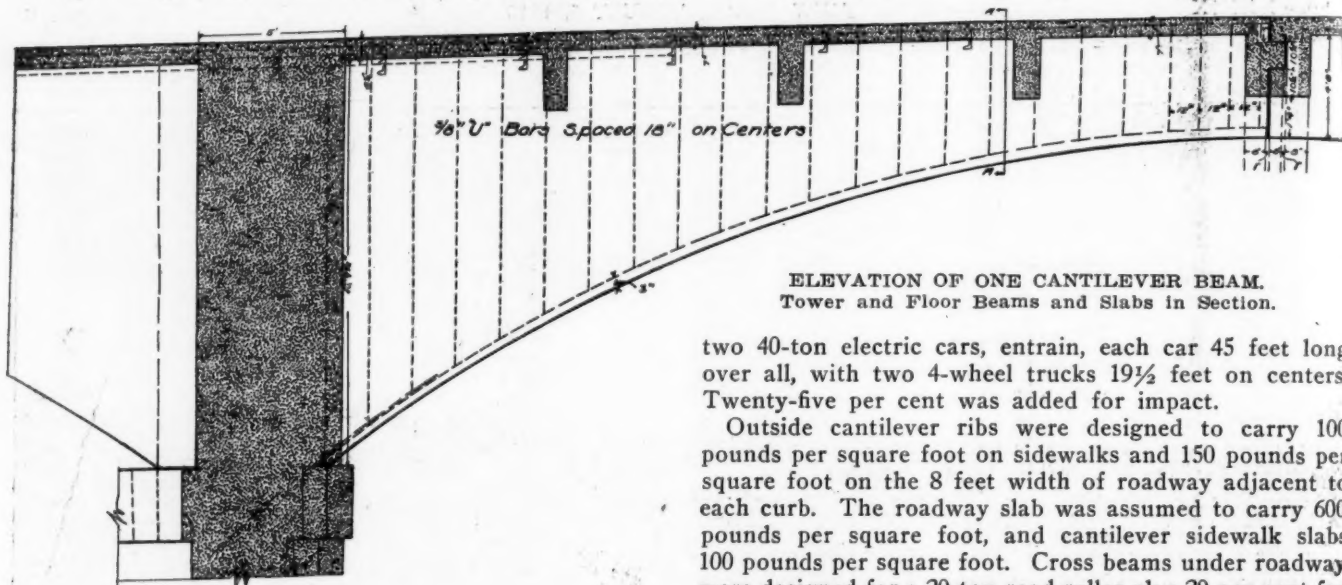
equal length, two lengths being used, 35 and 40 feet. By combining two 35's, a 35 and a 40 or two 40's, arch spans of 70, 75 and 80 feet are thus obtainable. There are also two 30-foot cantilever beams, as two of the arch spans are but 65 feet. This variation in spans was necessary in order to properly adjust the location of the piers to the railway tracks and other structures crossed by the viaduct. As the two cantilevers carried by any one pier are of equal length, their dead loads are equal and balanced

In computing the stresses due to dead loads, the following units weights were used:

Reinforced Concrete.....	150 lbs. per cu. ft.
Wood block paving and sand cushion...	30 lbs. per sq. ft.
Street railway tracks, double track.....	220 lbs. per lin. ft.
Track ballast, 1:4:8 concrete.....	150 lbs. per cu. ft.

For computing live load stresses the following loads were assumed:

The two middle cantilever ribs were designed to carry



ELEVATION OF ONE CANTILEVER BEAM.
Tower and Floor Beams and Slabs in Section.

two 40-ton electric cars, entrain, each car 45 feet long over all, with two 4-wheel trucks $19\frac{1}{2}$ feet on centers. Twenty-five per cent was added for impact.

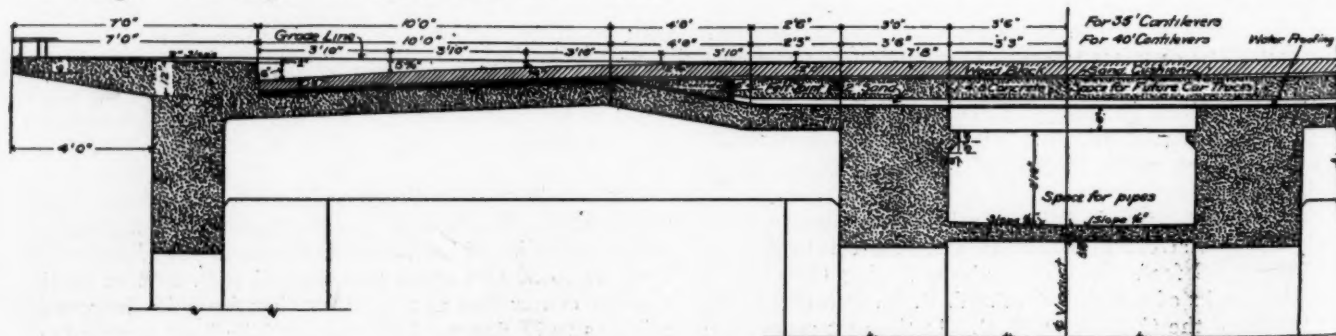
Outside cantilever ribs were designed to carry 100 pounds per square foot on sidewalks and 150 pounds per square foot on the 8 feet width of roadway adjacent to each curb. The roadway slab was assumed to carry 600 pounds per square foot, and cantilever sidewalk slabs 100 pounds per square foot. Cross beams under roadway were designed for a 20-ton road roller plus 20 per cent for impact, two-thirds of the load being assumed to rest on the rear wheels, 7 feet on centers, front and rear axles being 11 feet on centers.

The following maximum unit working stresses were used: Tension in reinforcing steel:

(a) in piers and footings.....	20,000 lbs. per sq. in.
(b) in all other parts.....	18,000 lbs. per sq. in.
Compression (extreme fibre) in all concrete.....	700 lbs. per sq. in.
Shear in concrete.....	65 lbs. per sq. in.
Dead load per pile (average).....	23 tons
Dead plus live load per pile (average).....	27 tons
Maximum load on outside rows of piles under extreme condition of unbalanced live load.....	35 tons
Maximum pressure on rock foundations.....	8 tons per sq. ft.
Maximum pressure on earth foundations.....	3 tons per sq. ft.

and produce no bending moment in their supporting pier. The only forces, therefore, which will produce bending moment in the pier are unbalanced live loads. The cantilever design was adopted on account of the fact that most of the piers rest on concrete piles driven into a compressible soil and may, on that account, settle unequally. Such settlement, unless excessive, will cause no serious trouble, since each pier is separated from its adjacent piers by expansion joints.

The expansion joint in each case is formed between two cross floor beams, each at the end of its cantilever beam, which are locked into a double beam by a tongue and groove. From the middle of the forward side of one beam a rectangular tongue extends into a corresponding groove in the face of the other beam, this tongue and groove joint extending horizontally across the width of the bridge. The tongue is 9 inches wide and 10 inches



HALF SECTION ACROSS VIADUCT FLOOR.
Shows Cantilever Beams in Section, Floor Beams in Elevation.

deep and the groove is slightly larger. The vertical faces of the joint are separated by a 1-inch layer of tarred felt and the horizontal faces are separated by three layers of heavy tar paper. The joint is continued also through the concrete railing as a straight cut about an inch wide, the two parts of the railing not being tied together by tongue and groove joint.

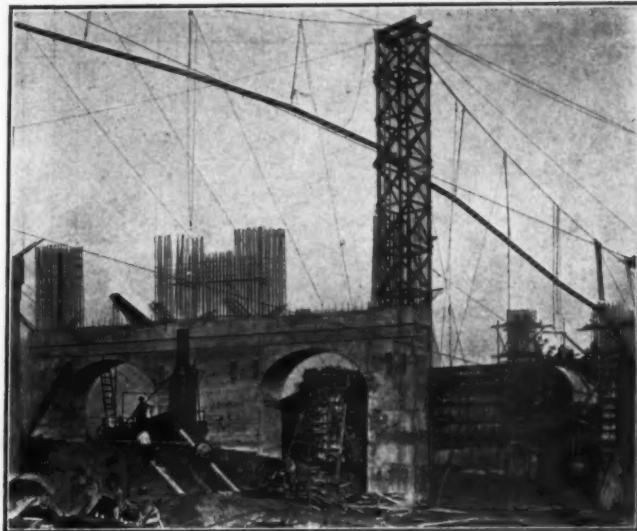
The piers are heavily reinforced to resist the bending moments of the live loads. They consist of solid masonry pierced by two arches which are carried up nearly to the springing line, the span of each arch being 14 feet and the height varying with the height of the pier. The piers are $5\frac{1}{2}$ feet thick below the springing line and 4 feet 9 inches above it. The outside legs are each 6 feet wide, and that

between the two arches is 15 feet 6 inches wide. The surface of the concrete in the piers is left plain; that on the exposed faces of the arches and also on the sidewalk railings has a plain depressed panel treatment.

Through the center of the roadway is carried a depressed space provided for laying car tracks, the bottom of this being 16 inches below the surface of the roadway and the bottom width being 18 feet. For the present this is filled by covering the bottom of the depressed portion with two inches of sand on which is placed 9 inches of 1:4:8 concrete, which serves as a foundation for the wood block pavement. Under the center of this car track depression is carried a conduit or space for pipes which is 2 feet 9 inches deep and 7 feet wide, and is covered with concrete slabs 8 inches thick which rest upon continuous brackets constructed in the side walls, as shown in the illustration. Manholes were placed in the pipe duct at intervals of about 100 feet through the entire length of the viaduct.

CONSTRUCTION.

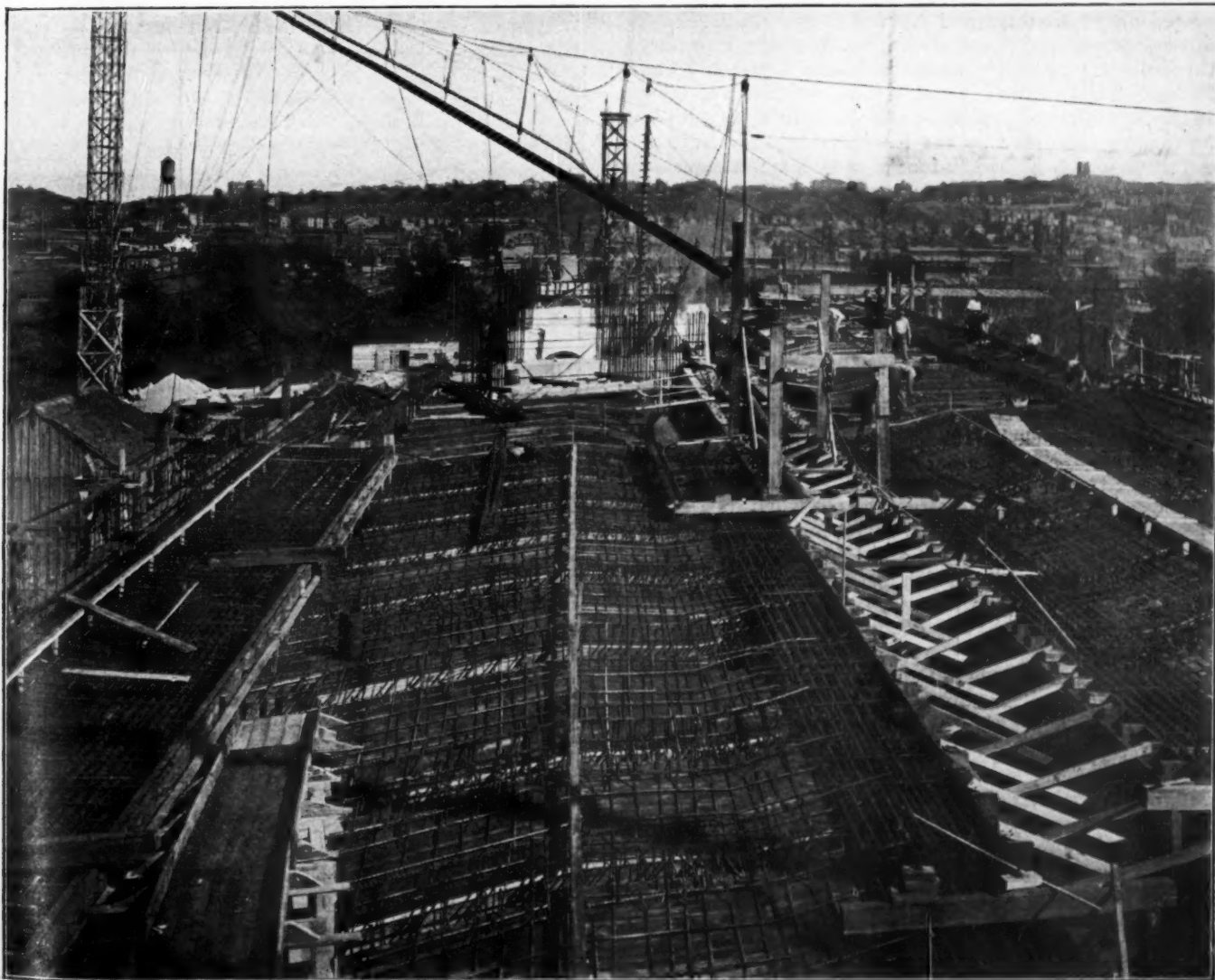
The foundation pits were carried to different depths, and most of them required to be carefully sheathed. The material excavated was handled by two guy derricks, each derrick serving two pits, being placed half way between them. The dirt and rock was dumped by them into a hopper, from which it was discharged into side dump cars and removed by gravity to an adjacent spoilyard. Two piers, one of them in Mill creek, were carried down



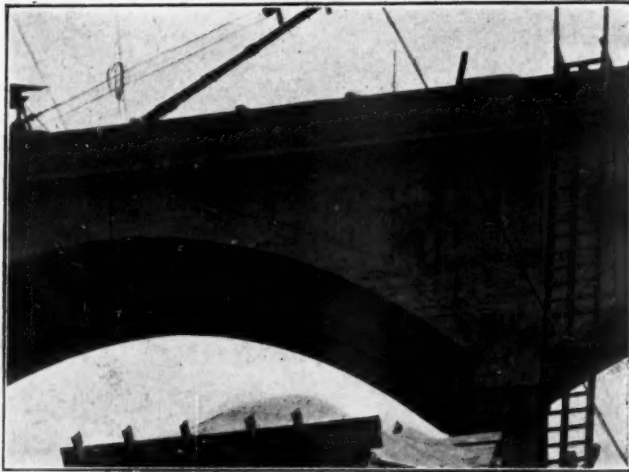
COMPLETED PIER READY TO RECEIVE SUPERSTRUCTURE FORMS.

On the Right an Unfinished Pier with Blaw Steel Forms in Place—Overhead is the Spout for Delivering Concrete to that Pier from Tower.

to solid rock at a depth of about 20 feet below water level. The coffer dam used for each of them was made of U. S. Steel sheet piling in 12-foot lengths, driven to rock with



FORMS AND STEEL REINFORCEMENT IN PLACE READY FOR POURING AN EIGHTY-FOOT SECTION OF SUPERSTRUCTURE.



EXPANSION JOINT CARRIED THROUGH ALL PARTS OF STRUCTURE AT CROWN OF ARCH.

a drop-hammer. The sheet piling was braced with 6 x 10 oak rangers and pile cross braces. The coffer dams were kept dry by an 8-inch centrifugal pump, the capacity of which was such that on one occasion, when a sudden rise in Mill creek overflowed the coffer dam, the pump emptied it in three hours.

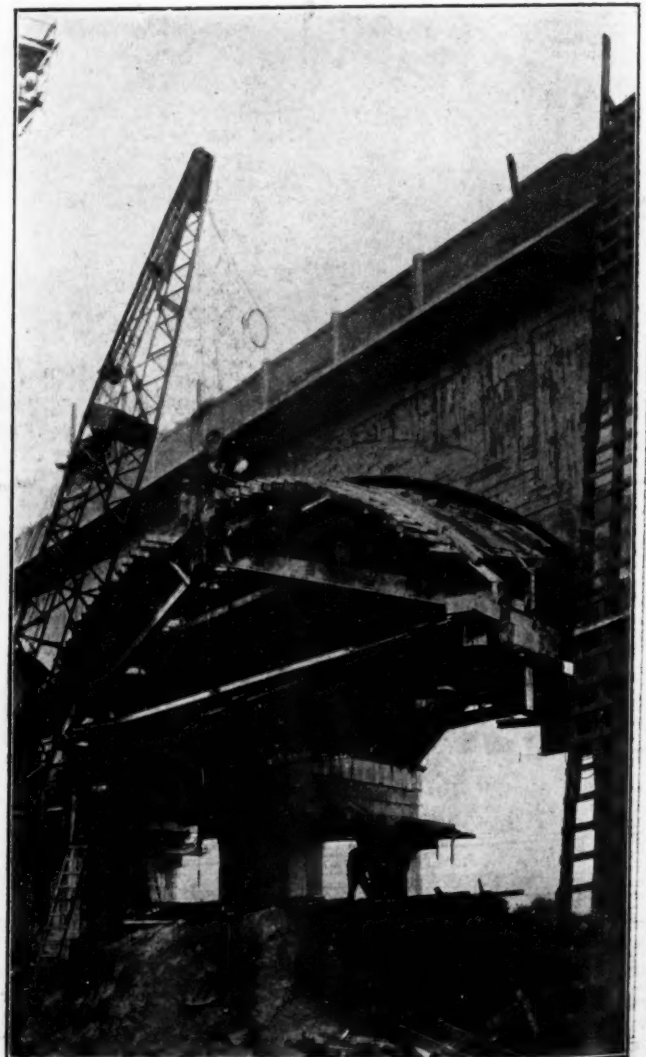
Other piers, which were not carried to rock, were supported on piles. Raymond tapered piles were used, spirally reinforced sheet steel shells, No. 16 gauge, being used throughout. The piles varied in length between 20 and 30 feet. They were driven to a penetration of $1\frac{3}{4}$ inches in the last thirty blows, being calculated to carry a load of 35 tons as computed by the Engineering News formula. A test was made of two 30-foot piles by loading them with 45 tons of pig iron, the maximum settlement after two weeks being five-sixteenths of an inch. The contract for driving the concrete piles was taken by G. H. Glandorf. For setting the forms for these piles a Brownell Company hoisting engine was used, mounted on a platform which rested upon large greased rollers to permit of shifting. When timed recently, it was found that 35 minutes were required to shift the driver, drive the core and shell, and draw the core.

All construction materials were brought from the B. & O. R. R. to the concrete plant and storage yard over temporary switch tracks which were carried over Mill creek on a pile trestle. The concrete plant which took care of the west 800 feet of the structure consisted of a cement house with a capacity of 1,500 barrels and storage bins for stone and sand on the right and left respectively, behind the cement house, from which materials were dumped into hoppers and fed by gravity into a Chicago mixer of $\frac{3}{4}$ cubic yard capacity. The concrete was distributed by a steel tower 160 feet high, reinforced for the first 50 feet with 12 x 12 oak timbers. Another steel tower 140 feet high was used in the construction. An auxiliary wooden relay tower, 90 feet high, was used to carry the cables from which the concrete chutes were suspended, this being erected sometimes on the ground and sometimes on top of the structure. This arrangement allowed for the distribution of concrete for a distance of nearly 400 feet each way from the tower.

The concrete piers were poured in steel forms. The forms for the vertical and battered sides of the piers were made in 5-foot sections, two sets being used at once, the lower set being released and placed on top ready for another pouring as soon as the concrete below had taken sufficient set. As soon as the piers were poured to the proper elevation, the steel forms for the 7-foot radius semi-circular arches spanning the openings in each pier were put in place, and forms for the balance of the pier

and coping were finished out in wood. The pier forms and steel rib centers were of Blaw manufacture. Reinforcement consisting of $1\frac{1}{8}$ -inch square twisted rods was carried up continuously from the top of the pier footings to the underside of the roadway slab to take care of the bending moments.

Just under the springing line of each arch in each pier were left two openings which were filled after the construction was completed; the purpose of the openings being to receive I-beams which are passed through and extended a few feet from each face of the pier to carry the weight of the center. On these I-beams were placed heavy timbers to serve as a track on which the arch centers rested and were moved from one position to another. Blaw rib centers and wooden side forms were used, the two ends of the arch form being tied together by steel rods in most instances; although in the case of arches crossing railroad tracks there was not sufficient clearance for this, and just before pouring, timber posts were placed at the center of the span to support the weight. The contractor used eight complete rib centers, all alike so as to be used interchangeably for either the inside ribs 3 or $3\frac{1}{2}$ feet thick, or outside ribs 2 feet thick. Extension units at the center of the span allow the forms to be used for both 70 and 80-foot spans, the tie rods being varied in length to correspond. Half the width of the viaduct, including one outside rib and the adjacent inside rib from one expansion joint to the next was placed at one pouring. Then, as soon as centers could be moved, they were shifted



REMOVING ARCH CENTER BY TRAVELING DERRICK. At the Left, Track for Carrying Center, Supported on I-Beams Inserted Through Piers.

over to the other side of the viaduct and the second half of the 70 or 80-foot section was poured. The average progress made in pouring the superstructure was $1\frac{1}{2}$ complete spans per month. A moving crane of ten tons capacity running on a track alongside of the viaduct was used for handling both wooden and steel forms and for raising the reinforcing steel from the storage yards below.

The sidewalk slabs are cantilevered from the outside ribs without the use of the usual cantilever brackets. A solid concrete railing was built in short sections with steel forms as fast as the progress of the superstructure would permit. The sheet metal forms for the railing were furnished by Joseph Honhorst Company of Cincinnati. These were held in place by braces on the inside, and on the outside by other braces resting upon the arch center. These pressed steel forms, when removed, left a smooth surface with a depressed panel pattern. The steel reinforcement of the railing was placed at the same time as the floor slab steel and braced until the railing was poured later.

The exterior surfaces of concrete, except on the railing, were later sand-blasted to a smooth and even finish, all board marks and other inequalities being removed.

The general contractor for the viaduct is the Kirchner Construction Company of Cincinnati.

The plans were prepared by the Division of Structures, City Engineering Department, of which H. M. Waite was then chief engineer, Frank L. Raschig, division engineer, and Edgar K. Ruth, assistant engineer in charge of design. The construction has been carried on under F. S. Krug, chief engineer; Frank L. Raschig, principal assistant engineer; Paul Laur, assistant engineer in charge of construction, and P. R. Kirstein, resident engineer. We are indebted to Mr. Raschig for the information given in this article and for the photographs.

LAYING A NEW BITUMINOUS PAVEMENT AT WEST PITTSBURGH.

Methods, Appliances and Force Employed by the Contractor—Itemized Cost of Motor Truck Hauling—Mixing Plant and Materials.

The borough of West Pittston, Pa., is paving one of its residence streets with the type of pavement known as National pavement, composed of asphalt cement mixed with pulverized clay or loam and laid much as sheet asphalt is laid, which was described in the June 10th issue of Municipal Journal. The work, which is being done by the National Paving Company of Scranton, includes the surfacing of about 7,000 yards of old macadam road, the construction of 3,110 feet of grouted brick gutters laid on a 5-in. concrete base and the placing of 125 ft. of new stone curbing and of 300 ft. of headers. The contract price for the construction of the pavement, including a guarantee of 5 years, was \$1.14 per square yard, and for the gutters \$0.40 per lineal foot. Construction work was started last month and all gutters, curbs and headers are now completed, the grading is nearly done and the paving is being laid at the rate of about 600 yards per day.

The old pavement was a close-knit limestone trap macadam very solidly bound and about eight inches thick, but worn full of holes and ruts. It was decided to use this for the foundation, but about three inches of it had to be removed on the sides and two inches in the middle to bring it to grade. The crown of the new pavement varies from $4\frac{1}{4}$ to 6 inches.

The surface of the old road was first scarified and harrowed to break it up thoroughly. A road scraper was then used to take off about two inches of the loosened

stone, which was scraped into piles to be removed later by teams. After this the surface was again harrowed and the fine grading gang put to work with picks and shovels to reduce the street to proper grade. All excess material, according to the terms of the contract, is to be hauled not more than 2,000 feet by the contractor. This stone will later be used by the borough to surface streets.

The fine grading gang consisted of 16 men, as follows: Seven shovelers, seven men with picks, a man to give grades and a foreman. Grades were generally given by stretching a tape from curb to curb and measuring down at quarters and at the center. The pickmen loosened up the macadam where the harrow could not reach, as



MOTOR TRUCK USED FOR HAULING PAVING MIXTURE.

along curbs and around manholes, or where it did not reach deep enough. The shovelers usually loaded directly from the street surface into the wagons, the seven men filling a $1\frac{1}{2}$ -yard wagon in about five minutes. Where wet spots were encountered, drains were placed, if necessary; or the wet material was removed and the space filled with broken stone.

As soon as the surface was brought to grade, it was rolled with a 10-ton 3-wheel roller until it was so thoroughly compacted that there was no movement of the stone under the roller. Owing to the character of the stone and its depth, a first-class foundation was secured by this rolling.

The street was then ready for the application of the hot pavement, which is mixed at the plant at Taylor, just outside of Scranton and $7\frac{1}{2}$ miles from West Pittston. Owing to the necessity of rapid construction and to the fact that there was no other plant ready to put in service at the time, it was necessary to haul the material by motor truck from the Taylor plant. The pavement is laid in two coats or layers, the material in both being the same.

The trucks, which carry about $4\frac{1}{2}$ tons each, back up and dump their load at the place designated by the foreman of the laying gang. As they are all equipped with power dumping apparatus, the time required for unloading, including that lost in backing into position, is less than five minutes. The mixture is shoveled from the pile into place (care being taken to turn over all the material) and raked smooth. This layer of loose material is made about three inches thick and all hollows and depressions in the foundation are filled.

As soon as the material is spread, it is rolled and cross rolled thoroughly with a Dunham water-filled hand roller weighing about 700 pounds, the sections along the curb and around manholes being first tamped into place with hot irons. In doing all this work, the men are careful not to step on the hot surface, the roller having a handle 12 feet or more in length. The pavement is now allowed to cool for a time. This laying and rolling

gang numbers twelve men. There are four shovelers, two rakers, two tamers, two hand roller men, a utility man and the foreman.

The same materials and methods are employed in laying the top coat as described above. The two layers, each of which is of three inches of loose material, compress to a total thickness of three inches, the depth of the finished pavement.

After the surface has cooled so that it will not "work" too much, rolling is resumed with a five-ton tandem asphalt roller. This is sent over the pavement slowly (at a rate not exceeding three feet per second) until its passage leaves no mark on the pavement. A strip 50 feet long will usually be rolled for an hour or an hour and a half. Care is taken not to allow the roller to stand in one place any appreciable length of time, until after the surface has thoroughly cooled.

In appearance the finished pavement is not unlike asphalt. It is very dense and noiseless and did not mark under traffic even in the heat of the July sun.

HAULING.

Three "Indiana" self-dumping motor trucks manufactured by the Harwood-Barley Manufacturing Co. of Marion, Ind., with a capacity of 3 to 4 tons each, are being used for transporting the material from the mixer. On account of the length of haul, however, the three trucks are sufficient to keep the plant working at only half time and this also delays the gangs laying the material. At least three more trucks are needed to keep the plant at full capacity, but the company has been unable to secure more.

The schedule now in force requires that the first two trucks to load in the morning make five trips and the other one four trips per ten-hour day, excluding delays and accidents. The average schedule of the trucks as taken from the reports furnished by the National Paving Company shows that five minutes are required to

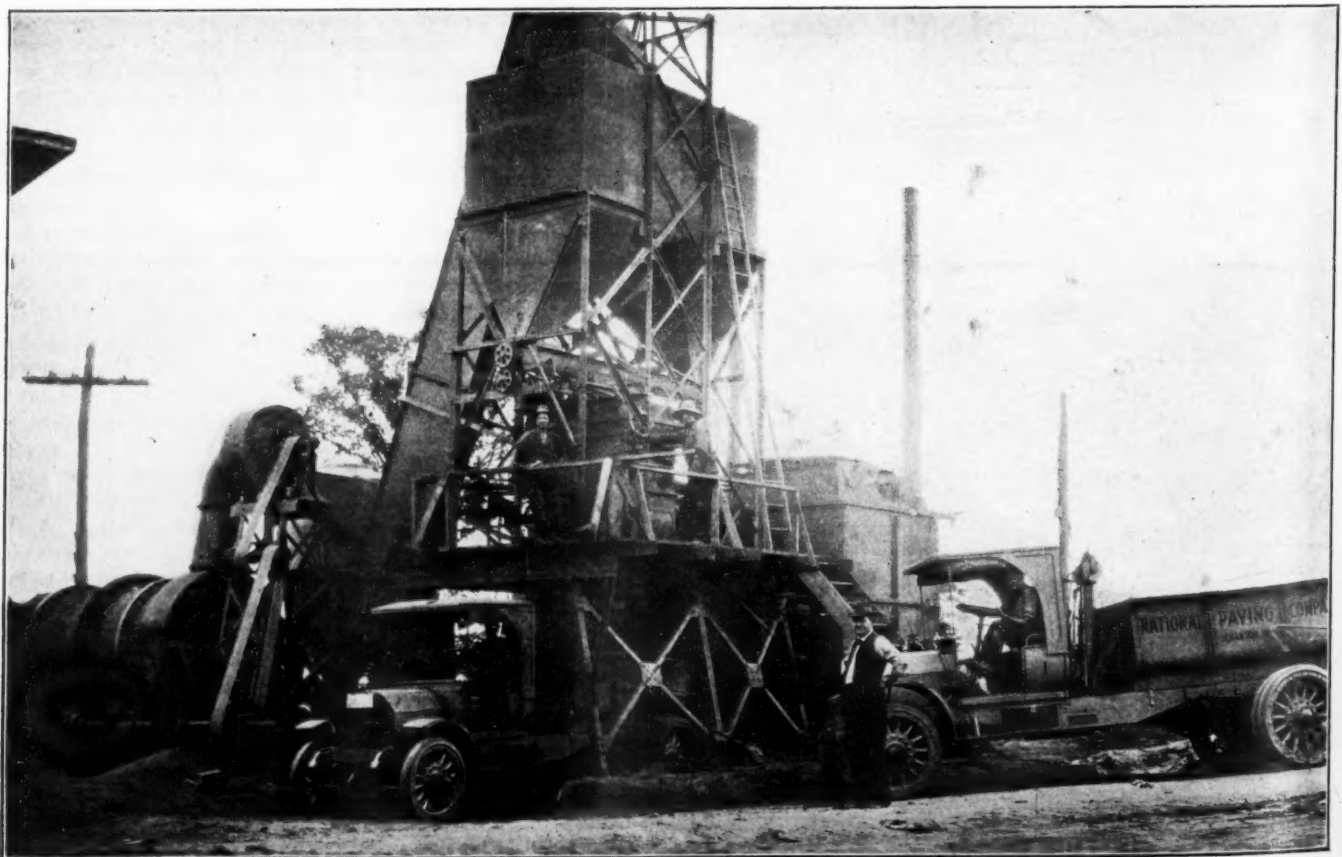
dump the load, 40 minutes to 50 minutes (an average of 45 minutes) to make the 7½-mile trip each way and fifteen minutes to load, the total time required for a round trip being about 1 hour and 50 minutes. The uniformity in the time required to make the long trip is partly due to the fact that the trucks are equipped with governors which limit the speed to 12 miles per hour. The trucks are loaded regularly with 8,500 pounds of mixture, though occasionally this amount is increased.

Depreciation and cost of operation are charged against the trucks in a lump sum of \$15 per day, though this is admitted to be in excess of the actual cost. The gasoline consumption averages, according to the company's records, 15 gallons per day of 75 miles travel. The cost of operation is then divided as follows:

Gasoline, 15 gallons at 15 cents.....	2.25
Driver	3.00
Depreciation	9.75
Total cost	15.00
 Total mileage	 75
Mileage loaded	37.5
Cost, per mile	20c
Load, tons.....	4¼
Ton-miles	160
Cost per ton-mile, about.....	\$.09375

THE PLANT.

The company's plant at Taylor, which was manufactured for the Bituminized Road Co. of Kansas City, Mo., owners of the process, product and machine patents, has a capacity of about 1,200 square yards of pavement per day. Roughly the machine consists of two drums, one inside the other, the outer of which acts as a heater. The two pulverize the material, which is then carried to a storage bin whence it is drawn and mixed with the asphaltic cement. Power for the plant is furnished by a 75-h.p. G. E. motor.



PAVING PLANT AT TAYLOR.

One truck being Loaded—Mixing Tank, with Dust Bins Above—Asphalt Heating Kettles at Right Rear—Pulverizer at Left.

The aggregate, which is simply earth taken from an adjoining field, is raised by an endless bucket conveyor and deposited in the outer drum. Here it is heated by two oil fuel burners working under 65 pounds of air pressure.

On the inside of the large drum are shelves about 4½ inches wide. These carry the material up and drop it on the inner drum (which revolves at about 600 r.p.m.) on which are blades arranged normal to a helix so that the material is worked toward the end of the drum; meanwhile throwing it repeatedly against the outer drum. This process is continued until all the earth is pulverized and comes out as flour. A screen prevents stones and unpulverized articles from entering the conveyor which carries the material to the bins.

The plant has two seven-ton heating kettles and these are filled from an 8,000-gallon tank, the asphaltic cement being forced through a 2-inch pipe line jacketed with a 3-inch steam line, by a Kinney oil pump which is driven by a 3-h.p. motor. From these kettles the asphaltic cement is pumped into an automatic measuring cylinder. As the asphalt fills the cylinder, a piston is pushed up until it strikes a valve, cutting off the flow from the kettles. A valve is then opened and the asphalt cement flows into the mixing chamber. The mixture used consists of about 850 pounds of pulverized earth and 150 of asphaltic cement.

MATERIALS.

The earthy aggregate is dug from an adjoining field, two teams, one with a plow and the other with a scraper, being employed in keeping a supply of dirt on hand. The specifications or requirements for the aggregate are decidedly elastic, almost any soil in which there are small quantities of sand or gravel and a large percentage of

clay being suitable. Clayey soils readily pulverize into very minute particles and so are especially suitable. The earth used at Taylor is a kind of clayey loam, which gives very good results. It is of course necessary to strip off all sod and remove all vegetable matter.

A softer asphalt cement may be used than in sheet asphalt construction owing to the fine state of division of the aggregate. Specifications for the asphaltic cement are:

Impurities: The asphaltic cement shall contain no water, decomposition products, granular particles or other impurities, and it shall be homogeneous.

Penetration: It must be of such consistency that when at a temperature of seventy-seven (77) degrees F., a No 2 needle weighted with one hundred (100) grams will not in five (5) seconds penetrate more than twelve (12) nor less than ten (10) millimeters.

Loss by Volatilization: When twenty (20) grams of the asphaltic cement shall be heated to, and held at, a uniform temperature of three hundred twenty-five (325) degrees F. for five (5) hours in a cylindrical vessel two and one-half (2½) inches in diameter, the loss shall not exceed four (4) per cent., and the penetration after heating shall be more than one-half (½) of the original penetration.

Ductility: When pulled vertically at the rate of one centimeter (1 cm.) per minute in a bath of water, a cylinder of the asphaltic cement one centimeter (1 cm.) in diameter, at a temperature at which its penetration is fifty (50), shall elongate to the extent of not less than thirty (30) centimeters before breaking.

Solubility in Carbon Bisulphide: It shall be soluble to the extent of at least ninety-nine (99) per cent. in chemically pure carbon bisulphide at air temperature.

Solubility in Carbon Tetrachloride: It shall be soluble to the extent of at least ninety-eight and one-half (98½) per cent. in chemically pure carbon tetrachloride at air temperature.

Specific Gravity: The specific gravity of the asphaltic cement shall not be less than unity at seventy-seven (77) degrees F.

Fixed Carbon: The A. C. shall not yield more than fifteen (15) per cent. of fixed carbon on a mineral free basis.

Flash Point: It shall show a flash point of not less than three hundred fifty (350) degrees F. (New York State closed oil tester).

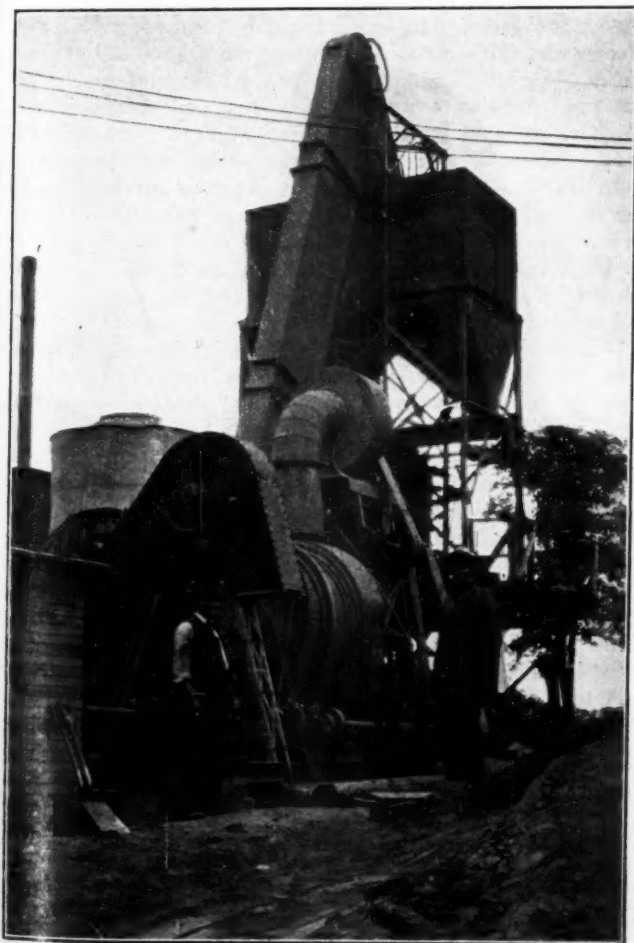
The company which is doing this work has also laid some of this pavement at Taylor, Pa., where the plant is located, the paving material in this case being laid on a solidly rolled earth base.

DENVER'S MUNICIPAL ASPHALT PLANT.

The municipal asphalt plant has been in operation nearly five years. During 1914 the output, which exceeded that of any previous year, was 99,717 yards, which were laid at an average cost of \$0.723 per yard. Of the asphalt laid there was 63,674.4 yards classed as general repairs, which cost \$0.8435 per yard, 220 yards of miscellaneous cuts at \$1.09, 12,496 yards resurfacing at \$0.3487, 1,120 yards repairing at \$0.8474, 7,035 yards at \$0.6955, 13,028 yards resurfacing at \$0.639, 1,131.6 yards repairs for street railway charged at \$1.25 and 212 yards repairing at \$0.797.

STREET OPENING REGULATIONS AT ANDERSON.

An ordinance was passed last year at Anderson, Ind., which is designed to do away with damages to streets due to sunken trenches, poorly replaced pavements, etc. The new ordinance provides for a trench refilling gang to be maintained by the city and paid from funds collected from the private companies doing work in the streets and alleys. Twenty per cent of the actual cost of refilling each trench is added to each bill to cover future repairs and maintenance by the city, and the trench repair gang has been self-sustaining. Approximately 450 service connections for water, sewer and gas have been put in during the last year, and with few exceptions the city has filled them. Much attention has been given to the inspection of sewer service connections with the hope of



PAVING PLANT AT TAYLOR.

Dirt Elevator in Foreground; Pulverizing Drum, Fan, Elevator and Dust Bins in Rear.

obtaining efficient installations and thus minimizing the service connection stoppages which are so common and are due in many cases to poor initial construction.

The city engineer, E. A. Funk, has also recommended the adoption of an ordinance providing that all service connections be placed before the paving is laid. There is at present an ordinance in force in Anderson prohibiting the opening of streets for five years after the laying of the pavements.

CLARIFYING SEWAGE BY FINE SCREENS

Shovel-Vane, Drum and Riensch-Wurl Screens—Descriptions of Installations of Each in Europe and America—Cost and Efficiency.

(Continued from page 145.)

SHOVEL-VANE SCREENS.

A very ingenious modification of the wing screen is the shovel-vane, patented and manufactured by the Gieger Mfg. Co. of Karlsruhe. In this screen there are five semi-circular vanes between two circular plates which form the sides of the apparatus. The axle is hollow with the top third open, and contains a belt conveyor. Owing to the shape of the vanes, which are nearly tangent to the outer circumference of the side plates and to the radius at their inner edge, the sediment and floating matter are scooped up gently above the surface of the sewage, with little loss or disintegration, slide along the vane as it rises and finally drop through the opening in the top of the shaft onto the belt conveyor. Such material as adheres to the vane is brushed off mechanically when the vane is above the axle by a piassava fiber brush on the end of an arm swinging from a center near the middle of the adjacent vane. The screen vanes are of pressed wires of V section, and are 1, 2, and 3 millimeters apart and held in place by a central rib and by round transverse tie-rods. There is a clearance of only .04 inch between the screen and the curved bottom of the channel under it. These screens are in use at Strassburg and Gleiwitz, Germany, and Temesvar, Hungary.

At Strassburg a population of 160,000 contributes daily 11,900,000 gallons of sewage containing trade wastes, which first passes through two vertical screens of bars .32 inch apart. The screenings and grit are removed daily to the amount of .034 cubic yard per thousand inhabitants. The force at the plant consists of a superintendent, a machinist and two men who attend to the screen, load and care for the scows, etc. The total cost of removing the screenings and grit, amounting to 1,600 to 2,000 cu. yd. annually, is about \$2 per cubic yard. The cost of operating the fine screens, exclusive of labor, is 30 cents per ten-hour day and the power consumed is 25 kw.h. The piassava brushes which clean the fine screens last about two months and cost \$83.50 to \$95 for renewal.

At Gleiwitz two screens of this kind 12½ feet in diameter and 5.9 feet wide clarify from one million to 2,600,000 gallons per day from a population of 67,000. The vane rods are .12 inch apart. About .19 cubic yard of material per thousand persons daily is removed at an annual cost of \$480 to \$710. The cost of each screen was \$2,800 and that of the entire plant was \$6,860. One man attends to screens and pumps during the day and one at night. The power required for operation varies from 1 to 2 h.p.

At Temesvar are two shovel-vane screens 11.8 feet in diameter and 5.25 feet wide, with a free opening of .12 inch. Only one screen is operated at a time. The tributary population is about 60,000 and the rate of flow from 3,650,000 to 9,150,000 gallons per day. With a flow of

4,600,000 gallons per day, the power consumed is 1.8 k.w. per hour. Only one man is required for the operation.

DRUM SCREENS.

The drum screen is quite different in design from the others. In its original form it consists of a short cylinder rotating on a horizontal axis, with the curved portion and a ring at the effluent end composed of perforated plates. The sewage enters at one end and passes out through the perforations, the grosser solids being intercepted. The interior surface is divided into 16 to 24 compartments by radial plates attached to the end plates. By these radial plates the screenings are raised by rotation of the drum and by a curved guide plate concentric with the drum are prevented from falling until near the top, when they drop to a can, hopper or conveyor placed in the center. Material tending to clog the perforations is blown inward by an air jet delivered by a swinging nozzle on the exterior, which passes each hole at least twice during the rotation of the screen. The drum is usually from 8 to 13 feet in diameter and about 1½ feet deep, and the annular end plate about 10 inches wide. Metzger, the original designer, found that with a wire mesh a fuzzy mat or film of detritus formed over the surface; also that the holes .4 inch in diameter clogged more readily than smaller ones. Both water and steam were tried for cleaning but were found objectionable because they increased the moisture in the screenings, in addition to which steam resulted in an objectionable odor.

There are four of these screens at Bromberg, 8.2 feet in diameter with perforations .08 inch in diameter. They revolve once in 50 seconds. The nozzles swing back and forth 85 times per minute and deliver 70 to 77 feet of compressed air per hour, which amount has been considered too great. The screenings are removed by a band 2 feet wide. This machine removes from 1,160,000 gallons per day 4¾ tons of material per million gallons. The material contains from 40 to 60 per cent of moisture, which is reduced to 34.3 per cent by drying on a warm plate. About .9 kw. is required to turn the screen and .3 kw. for compressing the air. The cost for wages and power amounted to \$2.45 per million gallons. If both screens were operated at full capacity of 23,250,000 gallons per day, the cost would be reduced to \$1.09. The mechanical plant complete cost \$7,450 and the screen house and foundations cost \$15,600.

Windschild improved this by substituting a truncated cone for a cylinder, which form is better adapted to fluctuations of flow, only the conical surface coming in contact with the current during period of least flow, but the sewage passing through both cone and annular end plate during flood flow. In his screen .6 atmosphere air pressure is ordinarily sufficient to clean the screen, increased to 1 atmosphere when the load is great. It was found that the air might be cut off entirely for considerable periods when the sewage was weak and small in volume, the screen having been cleaned in a few rotations by raising the air pressure to 1½ atmospheres, after it had been operating for 4½ hours without air.

A test of the drum screen was made at Mainz in 1910-1911 on sewage which had been broken up by pumping, a condition unfavorable to high clarification. The diameter of the screen was 11.5 feet and that of the perforations .12 inch. The width of the conical band was 2.73 feet and that of the annular plate at the end was 1.32 feet. A revolution was made in 110 seconds. The power required to operate the drum was from 1½ to 2 kw. and for running the compressor was 2.4 to 3.2 kw., compressing to 1 and 1½ atmospheres respectively. In general, it may be said that, notwithstanding the unfavorable conditions and with a sewage containing bare-

Data Relating to the Several Screens Described in This Paper.

Type of screen.	Name of inventor or manufacturer.	Location.	Clear opening, in inches.	Screens.		Percentage of efficiency.	Horsepower per screen.	Cost of operation.		Remarks.
				Per million gallons.	Per 1,000 population daily.			Per million gallons, screen, ga.	Per cubic yard of screenings, screen, ga.	
Band.....	Brunotte.....	Hamburg.....	0.6	0.34 cu. yd.	0.018 cu. yd.	87	2.5	....	....	{ After removal of half this volume of grit.
	Hertzberg.....	Göttingen.....	0.4	3.8 cu. yd.	0.282 cu. yd.	....	2.0	....	....
	John Smith & Co., Sutton.....	.....	{ 0.375 meshes per inch	0.6 ton	....	....	....	....	....
	Jennings.....	{ Chicago Stock Yards	0.40	2.4-3.1 tons	0.112 ton	79	....	....	....
Wing.....	J. S. Fries Sohn.....	Frankfort.....	0.40	1.15 cu. yds.	0.053 cu. yd.	75	5.0	....	\$0.18	{ After removal of 16% by grit chamber. Including 0.6 cu. yd. grit per million gallons.
	J. S. Fries Sohn.....	Elberfeld.....	0.20	1.1 cu. yds.	0.079 cu. yd.	....	....	....	....
	Stralsund.....	.....	0.60	1.1 cu. yds.	0.033 cu. yd.	....	4.5	....	....	{ After passing 1.6-in. bar screen.
	Wiesbaden.....	.....	0.10	1.6 cu. yds.	0.043 cu. yd.	89.3	Hand power	\$1.64†	....	{ After removal of 0.132 cu. yd. grit and coarse screenings per 1,000 population.
Shovel- { vane. }	Geiger Mach. Wks. Strassburg.....	.....	0.12	0.9-1.7 cu. yds.	0.192 cu. yd.	63	3.35	....	0.054	
	Geiger Mach. Wks. Gielwitz.....	.....	0.08	0.9-1.7 cu. yds.	0.067-0.133 cu. yd.	60-70	....	0.90	0.125	
Drum.....	Windschild.....	Bromberg.....	{ 0.04-0.08 meshes per inch	0.52 cu. yd.	....	40-60	5.2-6.8	Small 2.45	....	Experimental.
	Windschild.....	Mainz.....	0.10	0.39-0.42 cu. yd.	0.13 cu. yd.	50-60	....	0.89-3.42	....
	Windschild.....	Trier.....	0.08	3.2-4.0 cu. yd.	0.80-0.10 cu. yd.	....	9.00	2.41	....
	Windschild.....	Osnabrück.....	0.20	36 meshes per inch	1.0 cu. yd.	89.5	2.0	1.00±	....	{ Before removal of 0.4 cu. yd. grit per million gallons.
	Weand.....	Reading, Pa.....	36 meshes per inch	1.4 tons	....	71.3	....	....	....
Riensch- { Wurl.. }	Riensch-Wurl.....	Brockton, Mass.....	0.20	0.97 tons	0.09 cu. yd.	84	2.5	0.325-1.76	....

*The figures in this column should be used with caution. More complete data should be secured, in order to furnish a reliable comparison between the efficiencies of different screens. †Including coarse screening, settling and subsequent screening.

ly one ton of suspended matter per million gallons, the screen removed 46 per cent to 61 per cent of the solids, the screenings containing about 75 per cent moisture. The cost ranged from 89 cents to \$3.42 per million gallons, decreasing with an increase of flow. During the tests the screen never clogged, did not fail to operate when overburdened, no slime or rust spots appeared on the surfaces and, although the cost for power was high, this was due in part to unfavorable conditions and would usually be offset by the small cost of installation for a given capacity.

A drum screen was installed at Trier in December, 1912. The population is about 40,000 and the sewage flow about 1,270,000 gallons daily with a maximum rate of flow of 28 cubic feet per second. The diameter of the screen is 14½ feet and its width is 3.94 feet. The perforations are .1 inch in diameter and spaced so that only .04 inch of metal remains between the holes. The screen plate is .05 inch thick. The screen rotates once in three minutes. It is operated by a 1 h.p. electric motor and a 2½ h.p. motor operates the compressor, 1 h.p. being required to swing the nozzle arms and circulate cooling water in the compressor. The screen removes about .4 cubic yard of material per day, which contains from 50 to 60 per cent water and is sold to market gardeners for 14½ cents per cubic yard. The cost of the plant, including buildings and machinery, was about \$8,600. The cost of operation per year was \$513.60 for power, \$364.85 for labor (at \$1 a day), \$191.10 for helper (at 50 cents a day), \$34.75 for lubricating oil and waste and \$14.30 miscellaneous; a total of \$1,118.60, or \$2.41 per million gallons.

A drum screen at Osnabrück, treating about 1,600,000 gallons a day, is 16.4 feet diameter at one end and 11.48 at the other and 4.27 feet deep. The perforations are .08 inch diameter. Two and one-half h.p. is used to operate the screen, 5 h.p. for the compressor and 1½ h.p. for moving the air jets. One man operates the plant, with an additional man during storms. The screenings amount to 3¼ to 4 cubic yards per million gallons, besides which .65 cubic yard of grit is removed from a grit chamber. The cost of one screen, grit elevator and motors was \$3,570.

The Weand screen was invented by O. M. Weand, contractor for the sewage disposal plant at Reading, Pa. Weand screens have been installed at Reading, Pa.; Atlanta, Ga.; Baltimore, Md., and Brockton, Mass. In this screen a fine wire mesh is protected by an outer coarse mesh of No. 12 wire. The material retained in the screen is worked to the farther end by the rotation of the screen, being carried forward by an interior spiral flange. At the outlet end it is elevated by short radial plates nearly to the top, where it falls to a chute delivering it to a belt or trough. The Reading screen is 12 feet long and 6 feet diameter and is covered with Monel metal mesh with 36 meshes to the inch, protected by ⅝-inch screen of No. 12 copper wire. It is cleaned by 1-16-inch water jets 8 inches apart, from a pipe which swings back and forth longitudinally near the outer surface. Screened sewage instead of water was used for washing. This screen treated five million to six million gallons per day. It is not now in use. The cost of operation was stated by Mr. Weand to be about \$1 per million gallons.

The screen at Brockton is similar to the Reading screen. Some trouble was experienced by clogging with grease, and to remove this the screen is stopped for half an hour every night and washed with caustic soda. In this screen there appears to be lack of proper support for the fine mesh, the interior spiral plate corrodes and there is wear in the holes for the bolts securing the frames to which the mesh is attached. During 1912 the

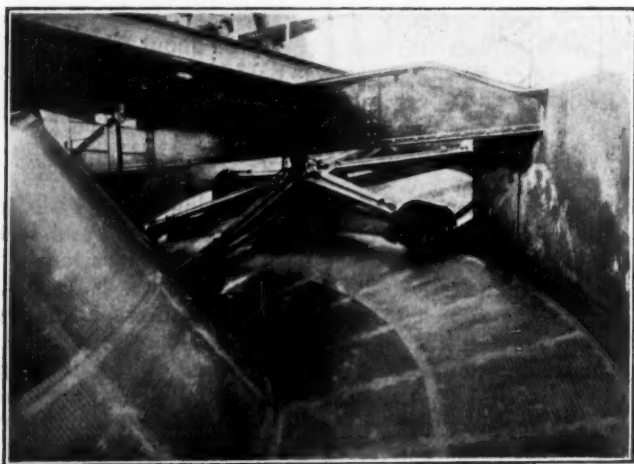
Brockton screen removed an average of 4,891 pounds of screenings per day, or 1.4 tons per million gallons. The screen requires the attention of one man in each of three eight-hour shifts.

Weand screens were installed at Baltimore, Md., and Atlanta, Ga., to prevent clogging of sprinkling filter nozzles.

Drum screens can receive grit as well as true screenings and therefore do away with the necessity of grit chambers. The speeds may be adjusted to the loads. They are compact, operate continuously without hand labor, and the screenings, when cleaned by air, are delivered with a relatively low moisture content. In the Weand screen there is a loss of several feet of head in passage through the screen.

RIENSCH-WURL SCREENS.

The Riensch-Wurl screen was first used in the city of Dresden in 1903. It was first devised by Riensch, who has since died, and improved by Wilhelm Wurl, to whom the patents were transferred. Because of the results obtained as Dresden, similar screens have been built at Bremen, Christiania, Stettin, Karlsruhe, Strassburg, St.

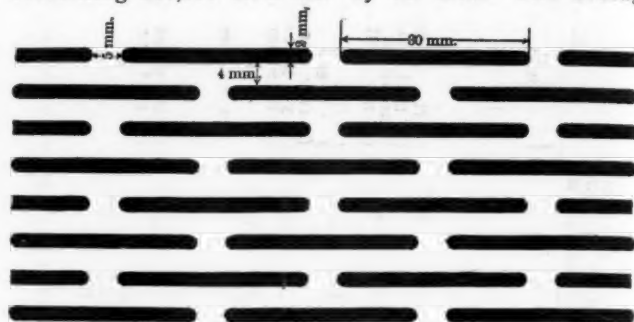


CLEANING BRUSHES ON RIENSCH SCREEN, DRESDEN.

Petersburg, Toulon and Astrachan. This screen was described by Municipal Journal of August 9, 1911, and is shown in the accompanying illustrations. The general shape is that of a hat with a flat brim. The shaft about which it rotates may be inclined at any angle, varying from 10 degrees to 30 degrees with the vertical. In the German plants the shaft is supported at top and bottom, but in the two plants which have been built in this country the shaft is supported entirely from bearings above the surface of the sewage. The screen plates are of brass or bronze and the perforations in them are made larger at the bottom than at the top, so that material which has once entered the slot will pass through without clogging. One feature peculiar to this screen is the large percentage of surface available for actual use, claimed by the manufacturer to be 80 per cent, as compared with 33 1-3 per cent for band screens and 20 per cent for wing screens. A screen 6 feet in diameter is estimated to have a capacity of 1,300,000 gallons per day and to be operated by $\frac{1}{4}$ h.p., while one 126 feet in diameter is assigned a capacity of 103 million gallons per day and is said to require $2\frac{1}{2}$ h.p. for operation. Screens of this type with slots two millimeters in width will ordinarily remove from 30 per cent to 40 per cent of the suspended solids, and with one-millimeter slots sometimes remove 50 per cent to 60 per cent., the exact quantity depending upon the character of the sewage. Ordinarily the head lost in passing through the screen

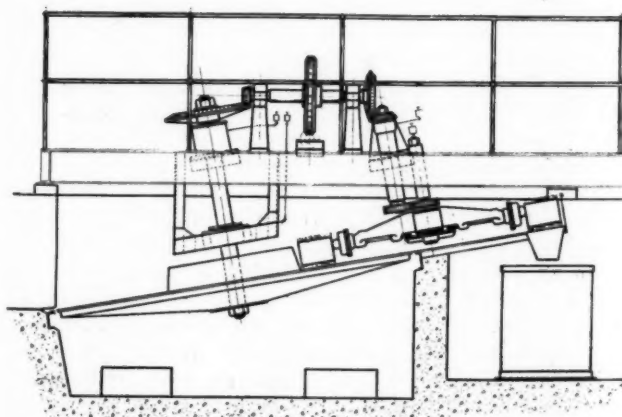
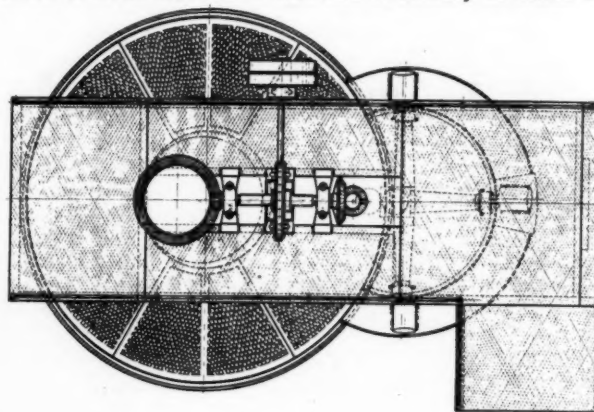
is from $\frac{3}{4}$ of an inch to 4 inches, but it reaches 10 inches during periods of maximum flow.

The Dresden plant contains four of these screens, each 26.2 feet in diameter, of plate bronze .2 inch thick and containing 230,000 slots .087 by 1.2 inch. The average



SLOTS IN RIENSCH-WURL SCREEN AT DRESDEN.

sewage flow is 26,500,000 gallons per day. This flow is usually taken care of by one screen, the other three being held in reserve for use during storms. About once in three or four months it is found necessary to clean the



RIENSCH-WURL SCREEN.
8 ft., 10 degree, overhung.

slots by steam. The sewage is backed up from 2 to 12 inches by the screen, averaging about 4 inches. The screens remove about .97 cubic yard of screenings per million gallons or .09 cubic yard per thousand inhabitants per day, containing 84 per cent moisture. It is drained to about 75 per cent moisture and sold to farmers at $4\frac{1}{2}$ cents per cubic yard. The odors about the screening dump are quite offensive. The power required varies from $2\frac{1}{2}$ to 3 kw. The cost of the Dresden plant was about \$2,150,000. The screens themselves cost \$12,000 each.

(Concluded in the next issue.)

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CHANGE OF ADDRESS

Subscribers are requested to notify us of changes of address, giving both old and new addresses.

Contributions suitable for this paper either in the form of special articles or of letters discussing municipal matters, are invited and paid for.

Subscribers desiring information concerning municipal matters are requested to call upon MUNICIPAL JOURNAL, which has unusual facilities for furnishing the same, and will do so gladly and without cost.

AUGUST 5, 1915.

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Planning City Streets.

An inspection of the article contained in last week's issue, giving a synopsis of the city and state laws governing the control exercised by municipalities over the laying out of streets indicates that there is apparently nowhere in this country a city which has any direct control over the planning of streets in the subdivision of private properties; and this includes practically all of the streets in most cities. It is true that in a number of the states provision is made for such control as may be secured by possession of the right to refuse to accept or to record the plan of a street layout which is not approved by council, some official or a city planning commission; but in practice this is found to have little effect in the majority of cases. Given a property which had been subdivided and from which lots had been sold to a number of individuals who had erected houses upon the streets as laid out by the original owners, and a council would be looked upon by the average citizen as hard-hearted and arbitrary which refused to accept these streets unless the owners of buildings on the property rearrange boundaries, move their buildings and otherwise conform the general layout of the property to another plan provided by the council itself.

Numerous instances of this kind have occurred, and although in some large cities, where the exercise of the power attracts much less attention, the officials may have the boldness to actually take such action as indicated (and it probably would not be necessary to do so more than once or twice); still, experience has indicated that in the smaller cities, where the regulation of street lay-

out would be of much greater relative benefit, the officials will almost never exercise the power and the street plan becomes almost entirely the result of private effort to obtain the greatest possible return from the sale of the property rather than consideration of what will be of the greatest benefit to the public at large.

There are, of course, instances where streets which are needed as highways for the general public are obtained by purchase or condemnation of private property. But there are some cities whose charters or ordinances make it illegal for the city to purchase any property for such purpose; and where this is not the case, by the time that the necessity for such a thorofare becomes imperative it is generally the case that other streets have already been laid out by private initiative which, if their location could have been publicly controlled, would have taken the place of such thorofare and rendered unnecessary the purchase of the new right of way.

We do not think it at all necessary that public officials or planning commissions should have the power to designate the exact location of all or even a majority of the streets of the city. By permitting various private owners, with their differing ideas as to street layout, to develop these in the minor residence streets, a variety and certain picturesqueness may be given to a city which probably would not result should the ideas of one man or one commission govern exclusively in the planning of the entire street system. There are, however, a considerable number of thorofares which are of more importance to the citizens as a whole than to the dwellers upon them. Such thorofares, which are to be used daily by considerable percentages of the population of the city, should be controlled almost exclusively in their alignment, grade, paving and other details by the needs and conveniences of the citizens at large. Residence upon such streets is merely an incidental use of them, their chief use being to serve as main arteries of travel for the public. This being the case, it seems to us that the city should have absolute control over such thorofares, not only in their layout and general planning, but also in their future paving and general maintenance; and it would seem logical also that the city at large should stand a considerable part of the expense of acquiring, constructing and maintaining such streets. In other words, it would seem as though every city should have the right, exercised through some commission or official, to determine what locations are desirable for public thorofares and acquire such locations, by purchase or condemnation if necessary; and that the cost of developing, paving, lighting and otherwise maintaining such thorofares should to a greater or less extent be at the expense of the general treasury.

On the other hand, side streets used only to give access to the residences which abut upon them are of little concern to the general public. So long as they are not so narrow, so poorly graded or otherwise designed and constructed as to render the homes of those residing upon them unsanitary, it would seem to be of little concern to the rest of the city whether or not they followed the preconceived ideas of any official body; and it might well be left to the owners of the property to lay out these streets as they see fit, limited only by certain general regulations as to minimum width of street, area of lot built upon, height of building, etc., which would be necessary to conserve sanitary conditions.

Jitney Busses.

The spread of the "jitney bus" from the Pacific to the Atlantic has been phenomenal in its rapidity and extent. Almost every city, large or small, has from one to a thousand of them. The problem which they present

to the transportation companies is becoming a serious one; but cities should realize that there are other problems as well, involving the safety and rights of the citizens at large. What these are, is indicated by the ordinances already adopted by a number of cities. A number of these were presented in synopsis in our April 29th issue, and we would suggest that every city give the matter its attention and prepare at once to exercise the needed control over this form of transportation. As feeders to the street railways, they may, if properly regulated, be a great convenience to the citizens without injury to the established transportation companies.

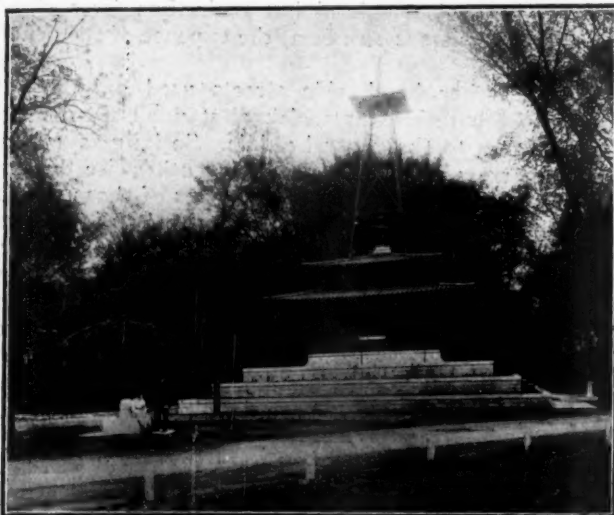
AN ORNAMENTAL PUMPING STATION.

When the waterworks trustees of Waterloo, Iowa, decided two years ago to add a fourth well to their water supply, they obtained permission from the park board to place it in Cedar River Park, a short distance from the river bank. This portion of the park is subject to overflow from Cedar river, and for this reason it was necessary to place the floor of the pumping station (wherein is the machinery for pumping the well water) nine feet above the ground level. In order to handle the deep well machinery, make repairs, etc., a 35-ft. steel tower was provided over the well. As the structure was in a park, it was desirable to treat it in such a way architecturally as to make it, as far as possible, in keeping with its setting. The photograph shows the result.

The building proper, on its elevated foundation, is 21 ft. square, of pressed brick in two colors with panel effect; surmounted with a double roof covered with tiles, the upper roof being three feet above the lower, giving the whole a pagoda effect. A third roof is placed over the top of the tower, surmounted by a flagstaff. The foundation walls are surrounded by a flight of three terraces with concrete retaining walls, the two upper walls being supported on concrete posts. The lowest terrace is 29 inches high and three feet wide, the second 28 inches high and three feet wide and the top one is 8 feet wide and forms a cement walk surrounded by a pipe railing. The two lower terraces are planted with shrubbery, and flower beds are placed around the structure.

Near it is a seat of concrete which has a unique feature. Through the center rises a four-inch water pipe, the top of which supports iron ribs in the form of an umbrella frame. Through the pipe grows (for the present, at least) a grape vine, whose branches are spread over the frame to furnish shade.

This well was begun on Nov. 4, 1913, and was drilled



Courtesy, Waterloo Evening Courier.
WATERLOO PUMPING STATION.

to a depth of 1,378 feet by April, 1914, ending in the Jordan sandstone. The first 200 feet is 15 inches diameter, the bottom tube is 6 inches. It flows about 1,400,000 gallons a day. The work was done under the personal supervision of John P. Berry, superintendent of the water department, the plans also being prepared by the department.

Haul of Municipal Refuse.

July 27, 1915.

The Municipal Journal,
50 Union Square, New York.

Dear Sir: In a recent article in the Journal, attention was called to a matter of large importance in connection with garbage and refuse disposal, viz., that of "haul."

To the average municipal mind (and no discourtesy to it, either collectively or singly, is to be implied) the disposition of garbage means moving it to the farthest point possible away from residences and its treatment there in some form of furnace, such as may be advocated by clever salesmen, perhaps with the advice of some more or less qualified engineer, though more often not.

But few places in this country have yet recognized that the problem begins with the house or store receptacle and its care; continued with the collection, daily or less frequently; kind of collector and length and route of haul, the treatment of collections and the utilization, sale or other disposal of final by-products.

But few engineers have given attention to the whole problem, because rarely, particularly in the large cities, have they anything to do with the operating sides of municipal life, consequently have not had impressed upon them the possible savings or losses on the collection side. Consequently they ignore it largely, and devote all attention to the disposal feature.

Again, it is a rare case where any reliable data are at hand concerning the real character of the refuse collected, and its seasonal variation; a fair guess from untrustworthy daily reports is tabulated and the furnace company guarantees the rest.

Do we wonder that, with careful manipulation of the furnaces during test days, the plant shows contract efficiency, but that after the normal, usually unskilled, management ensues, an analysis of costs brings far different figures and criticism follows?

The old contractor's dump cart has been improved upon for hauling refuse, but only in detail, not principle, and as yet horses have not been seriously superseded for motive power.

Noteworthy efforts are being made in a few cities to improve methods of collection and reduce the expense of haul, but sentimental, as well as too often valid, objection to disposal plants being placed anywhere within reasonable distance of the origin of the refuse makes the problem more of a diplomatic than an engineering one.

It is not the intention of the writer to make this comment a treatise or even an essay on the subject, though one of the most important and least understood of municipal activities, but rather to emphasize the importance of engineers and city officials considering the case as a whole, from house to use of final product, instead of merely the selection of a furnace or cooker and its site.

It might be true economy in a small city to indulge in very expensive long distance haul and make no real utilization of the refuse; possible return from the small quantity treated being insufficient to warrant large capital and operating charges.

It might be a wise investment for a large city to shorten the haul and construct expensive high class plants, equipped with all possible anti-nuisance appliances, even if the use or sale of by-products did not aggregate a large net total in dollars.

As a final word, it is a subject where haste should be made very slowly; where knowledge in advance and careful study of all factors is worth a whole lot more than looking back over years of large, unnecessary, annual expense, because some anxious official or pushing taxpayers' association wanted to "see the dirt fly." Too often also have unfortunate experiences elsewhere, in this country, though not so much abroad, given a black eye to plants located within rifle shot of habitations.

The subject is worthy of careful analysis, profound study, popular instruction, and generally intelligent broad-gauge engineering.

Yours very truly,
LOUIS L. TRIBUS.

The WEEK'S NEWS

State Highway Department News of Tennessee, Iowa, Wisconsin and Montana—Paving in Lowell and Haverhill, Mass.—Bridge Decision in Connecticut—Schenectady's Sewage Plant—Baltimore's New Filter Plant Completed—The Water Supply of the New Jersey Cities—Lighting of Milwaukee—Ohio Cities to Unite in Fire-Fighting—Finances of New York, Wilmington, N. C., Fort Smith, Ark., and the Cities of Kansas—Jitney News—Detroit's Railway Purchase.

ROADS AND PAVEMENTS

Tennessee's New Highway Commission.

Nashville, Tenn.—Gov. Rye has announced the three appointive members of the Tennessee highway commission and there is a representative from each of the three grand divisions of the state. The new members are: W. H. Crox, Bradley county, East Tennessee; Arthur H. Crownover, Franklin county, Middle Tennessee; Charles W. Williams, Henry county, West Tennessee. The other members of the commission, by virtue of their offices, are Tom C. Rye, governor; Dean Ferris, engineering and highway department, University of Tennessee; A. H. Purdue, state geologist.

Iowa Commission to Study Road Surfacing.

Des Moines, Ia.—Plans are being made for the appointment of a state commission to act with the state highway commission in an investigation, for a report to the thirty-seventh general assembly, of methods to hard surface Iowa roads. Governor Clarke has conferred with John A. Marston, of the state highway commission, and with a number of men prominent in Iowa's good roads movement. It is estimated that the state this year will spend \$6,000,000 on road work.

Wisconsin's New Highway Legislation.

Madison, Wis.—The special committee on highways' combination bill providing for a combination of the county and state system of road construction received the senate's indorsement by being sent to engrossment. The measure gives the county more authority in highway construction than under the present law, and reduces the limit of money that may be used for such work each year to a third of the present amount. The bill embodies the principal ideas in the Woodard bill passed by the assembly. Under the bill the state highway commission is required to advise towns, villages and counties regarding construction and maintenance of roads or bridges. It is required also to

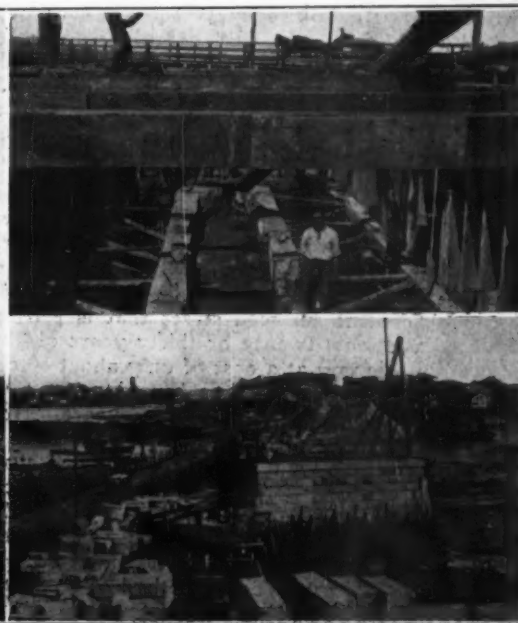
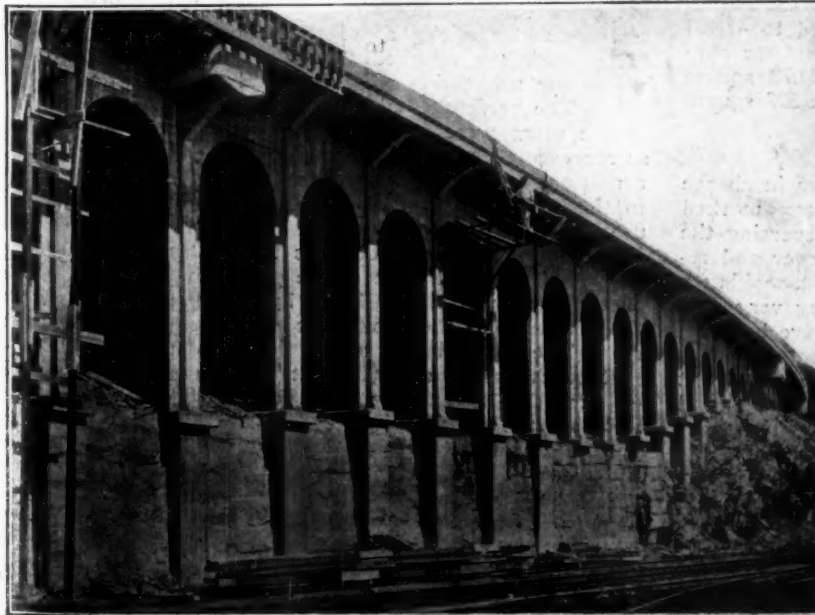
make suitable regulations for the surveying, planning, constructing and inspecting of all roads and bridges constructed under state aid. The bill provides for a county highway committee, to have charge of highway and bridge construction work, subject to advisory supervision by the state commission. Each county is to elect a highway commissioner to be under orders of the county highway committee. Salaries of county commissioners are to run from \$600 a year to \$1,200 in counties doing over \$50,000 worth of highway work a year. In a separate bill the state aid is systematized. It is provided that the state is to pay one-third, the county one-third and the town or village one-third of the cost of highway and inspecting of all roads and bridges constructed under state aid. In the construction of strictly state highways the county pays 40 per cent and the state 60 per cent. Counties are limited in levying taxes for highway aid to 2 mills per dollar on the assessed valuation of their taxable property, and towns with assessed valuation of less than \$600,000 to 2 mills, towns of assessed valuation of from \$600,000 to \$1,000,000 to 1½ mills, and towns of more than \$1,000,000 to 1 mill.

Progress on Portland, Me., Bridge.

Portland, Me.—The concrete work of the splendid new State street viaduct is making rapid progress. The accompanying illustration shows the interior of a caisson on the bridge foundation work; a view from the top of the last completed arch on the Portland side of the bridge and a view of a part of the completed viaduct.

Court Upholds Utilities Commission.

Norwalk, Conn.—The recent decisions of the Supreme Court of Errors in the Norwalk bridge case is of consequence to the whole state. This far-reaching interpretation of the law indicates that the Public Utilities Commission may order trolley companies to lay two tracks across bridges where public necessity and convenience demand it, and points out thirteen items of cost that may be con-



Courtesy, Portland (Me.) Evening Express and Advertiser.
VIEW OF COMPLETED PART OF VIADUCT.

Interior of Caisson on Foundation.
View from Top of Arch.

sidered in taxing the trolley company for the use of such structures. Among the items mentioned are the wear and tear on a bridge by the 50-ton trolley cars which pass over it, their effect on the future life of the bridge and the benefits to be derived by the trolley company by reason of a wider bridge. The Supreme Court had two matters to consider regarding the Norwalk bridge, one being the appeal of the Connecticut Company from the decision of the Public Utilities Commission, which ordered the company to lay two tracks on the bridge, and the appeal of the city of Norwalk from the amount which the commissioners ordered the Connecticut Company to pay for the use of the bridge. The two matters were heard before Judge Lucien F. Burpee in the Civil Superior Court, who held that the law under which the commissioners acted was unconstitutional and he reduced the cost levied against the trolley company by the commissioners from \$6,000 to \$4,906. Appeals were taken and now the Supreme Court reverses both decisions and holds that the law which Judge Burpee declared was unconstitutional is just the reverse and that the commissioners have the right to pass upon such matters when public necessity and convenience are concerned. About four years ago the city of Norwalk decided to build a new bridge and the legislature voted \$50,000 towards the expense of building it. The Public Utilities Commission, after hearing the testimony and carefully investigating the matter, passed the two orders later disputed.

Uniform Bridges in Montana.

Helena, Mont.—All county-built bridges in the future must now conform with the legislation for the uniformity of bridges in this state. The state highway commission force under the direction of Secretary George R. Metlen is busy preparing plans for bridges, a number of which have already been built or are in progress of construction. The law passed by the recent session of the legislature provides that counties shall submit data to the state highway commission and the latter shall prepare plans to fit the requirements, paying particular attention to uniformity as to loading capacity and to bridge type. Data furnished by the county includes contour of the banks, the depth of the stream at various points, the high and low water marks and the length from the center pier to the banks. The commission's engineer, C. A. Kyle, prepare plans.

Paving Work in Lowell.

Lowell, Mass.—City Engineer Kearney has submitted a report for the street department, comparing this year's work with that of 1914 during the first six months. The report shows that this year nearly 2,000 square yards of macadam was laid in excess of that laid in 1914 or 9,012 compared to 7,041. In the block pavement this year's work shows a gain of over 800 square yards, or 4,690.5 compared to 3,879.6. The 1914 graveling amounted to 42,463 square yards as against 41,905 this year. In 1914 tar concrete sidewalks were laid to the extent of 3,078 square yards, while the same work this year covers 5,597 square yards.

"Reversed Paving" in Haverhill.

Haverhill, Mass.—Roswell L. Wood, alderman in charge of the highway department, is achieving very marked economy in renewing paving by the plan of reversing the worn paving stones. The stones are turned over and replaced and filled in with pea-stone and cement, making a grouted, cement surfaced street that is proving very durable. Pavements twenty or thirty years old have been renewed in this way at a cost of only about 80 cents a square yard. Alderman Wood has been in charge of the street work of the city for a number of years. He first served two years as member of the street committee of the council; then he was for five years mayor and chairman of the street committee; now since the adoption of the new charter he has been alderman in charge of the department of highways for two two-year terms. As director of the work he is saving the city \$2,000 a year, the salary of a superintendent. Alderman Wood's method of renewing paving has been very useful at the time of financial limitations of the city. Last year the method was tried out on three streets and this year several more have been treated in this way.

SEWERAGE AND SANITATION

To Investigate Sewer Systems.

Johnstown, Pa.—Popular opposition to a proposed \$150,000 bond issue for a sewer system as planned by Sanitary Engineer Clark P. Collins and a demand for a referendum has caused the appointment of a citizens' committee to investigate sewerage systems for the purpose of forming definite opinions on the plans. The committee consists of: Engineer for Johnstown city council, A. B. Crichton; engineer for Cambria Steel Company, John C. Ogden; engineer for Lorain Steel Company, E. B. Entwisle; engineer for Chamber of Commerce, Foster Berkebile; three laymen, P. Lavelle, Dr. A. S. Fichtner, Walter E. Rose. The committee is to investigate the sewerage systems of cities of the size of Johnstown in order to determine whether the original plans are in accord with the best practice or whether a new set will be necessary.

Impure Lake Water Supply.

Boonville, Ind.—The city council will attempt to solve the impure water problem of the city by moving the intake pipe at the city water works lake so that the water may be taken in from the surface instead of the bottom of the lake. The action of the council comes as the result of a report from the secretary of the state board of health, who condemns the water in the city water works system as impure on account of decayed vegetation. Boonville people have been unable to use the water for more than two months.

Fights on Sewage Plant.

Schenectady, N. Y.—City officials, including Mayor J. Teller Schoolcraft, have announced their intention of fighting the action brought by K. D. Purdy, through his attorneys, Loucks and Alexander, to compel the cessation of odors from the sewage disposal plant or its operation altogether unless adjacent property owners are paid for the damages caused by the stench arising from the plant. Work on the elimination of the odors is reported by the engineering department as progressing slowly, but satisfactorily.

Meanwhile Pratt, Reed and Phillips, the contractors who built the sewage disposal plant for the city, have filed a claim for \$118,592.28, alleging that alterations to the original plans for the plant were made at the request of the city at a largely increased expense to the contractors, and that the city now refuses to pay for most of this extra work. The contract originally amounted to about \$235,000, and the contractors have already been paid about \$226,000, and claim that \$118,592.28 is still due them, while deputy city engineer W. E. Weller will only admit that \$27,692.94 is due. Under a clause of the original contract providing any differences between the contractors and the city as to the amounts to be paid for extra work are referred to the commissioner of public works for arbitration. The original contract was let in 1912. The present administration claims that the changes in the plant were necessitated because the soil was not as represented by the former city engineer and because of conditions not foreseen by him. The plant was turned over to the city Jan. 12 of the present year and has been in use since. The forty items for which extra compensation is demanded include alterations to the Imhoff or settling tanks, raising the height of the protecting dike, and extra excavating caused, it is alleged, by misrepresentations as to the character of the ground upon which the plant was to rest. The complainants allege that the design of the Imhoff tanks was so changed that the excavation of an area 40 per cent larger than first planned became necessary, and that the construction of the dike forced them to deposit the material excavated at a much longer haul from the scene of the work than they had been led to expect would be the case. The bidders were allowed only three days to prepare estimates, they claim, which deprived them of the time necessary to investigate the statement that the soil was clay and contained no quicksand, while, as a matter of fact, it contained large quantities of quicksand, which forced a loss of over \$4,200 upon the contractors on the one item of excavating.

WATER SUPPLY

San Francisco's Rate Case.

San Francisco, Cal.—After a year of stipulating the rate cases of the city against the Spring Valley Water Company have actually gone to trial before Master in Chancery Wright. Attorney Edward McCutchen, for the water company, announced that the hearing would occupy at least four months, so there is no prospect of a return of any of the \$2,000,000 impounded money immediately. The city's side of the case is represented by Assistant City Attorneys Steinhart and Searls. McCutchen is assisted by Attorneys Warren Olney and A. Crawford Green. The rate cases of the last seven years are combined in the present trial, which will be the last of its kind, because the rate-making authority now goes to the Railroad Commission. City Attorney Long stated that the city spent \$8,860 in the litigation during the month of July. A smaller sum will be needed in August. The engineering and accounting work and appraising will be practically completed this month but the experts who are to testify will have to be paid. The city's expense is only a fraction of what Spring Valley is spending. This trial involves the valuation of the entire Spring Valley properties for rate fixing purposes, and will be tried together and this necessitates experting the company's operation accounts for eight years. Attorney Long thinks he has a fair chance of winning at least a large part of the \$2,000,000 impounded money for the rate payers.

Baltimore's Big Filtration Plant Completed.

Baltimore, Md.—The splendid new filtration plant at Lake Montebello, costing, for the whole system, approximately \$1,500,000, has been completed. The work required more than two years to construct. The plant, which was described in detail some time ago, is ideally located. The elevation is sufficient to furnish the low and intermediate service of the city by gravity, but the high service must be pumped, as it has always been. The plant above ground, shown in the illustration, consists of a round pumping station (which is really an auxiliary to the filtration equipment), a rectangular aerator gate house, two other small gate houses and a group of four buildings over and adjacent to the filters which are practically one continuous structure. All the buildings are of rough-face brick of a red color and are roofed with green glazed Spanish tile.

The essential features of the plant are a mixing basin, two coagulating basins and 32 rapid sand filters; also a triple filtered water basin and a double filtered water reservoir. The pumping station lifts the water from the Loch Raven stream in the Gunpowder valley and discharges it into Lake Montebello, from which it is drawn into the filtering system. Four huge pumps have been installed in the pump-

ing station for the present, but provision is also made for the installation of additional pumps should they become necessary as the city grows. One of these pumps has a capacity of 50,000,000 gallons per day, two have a capacity of 40,000,000 gallons each per day and one has a capacity of 30,000,000 gallons a day. The power for these four pumps is from Westinghouse electric motors.

The plans for Baltimore's filtration plant were drawn upon recommendations by George W. Fuller, acting as consulting engineer, when Ezra B. Whitman was the city's water engineer. When the filtration division was started, just prior to the beginning of the plant in December, 1912, James W. Armstrong, who was formerly associated with Mr. Fuller in New York, was appointed to take charge of the work. Mr. Armstrong had charge of the final designing of the plant. In the construction of the plant he has been assisted by Steuart Purcell, the first assistant engineer of the filtration division, who has had charge of the outside work of the construction of the plant. The maximum daily capacity of the plant is approximately 128,000,000 gallons, while the average daily consumption of the city is now between 75,000,000 and 80,000,000.

A suit was instituted last year alleging that the contract for placing the sand and gravel in the plant had not been awarded to the lowest bidder. After being argued before the Court of Appeals the case was again brought into the lower court. Holding that it would endanger the health of the city if the work at the plant were stopped, Judge Ambler, while affirming the decision of the Court of Appeals that the contract on part of the work given to the American Water Softener Company is void, has just refused to grant the injunction asked in the petition of George Konig, acting as a taxpayer.

The Wanaque Development.

Newark, N. J.—Prompt development of the Wanaque watershed is assured from the attitude of the municipalities most interested as expressed before the State Water Supply Commission and from the opinions expressed by the commissioners and by Governor Fielder. The work of drafting the details of a joint development plan, with the taking over of the Little Falls plant of the East Jersey Water Company, is beginning and tentative contracts have been prepared. Paterson, through Mayor Robert H. Fordyce, announced that it would make a contract for 5,000,000 gallons daily at the outlet with the privilege of taking more. Passaic, through its special counsel, George L. Record, said it was willing to contract for 4,000,000 gallons daily. Walter Kidde, chairman of the water committee of Montclair, said that municipality would take 2,000,000 gallons. Kearny has contracted for 2,000,000 gallons and Harrison has voted to join in the development plan to the extent of taking 2,000,000 gallons daily. There are other



Courtesy, Baltimore (Md.) News.

BALTIMORE'S NEW FILTRATION PLANT AT LAKE MONTEBELLO.

municipalities that are considering the advisability of becoming partners in the enterprise, particularly Jersey City and North Hudson and Bergen towns. Irvington is considering the proposal. Newark will ask for at least 10,000,000 gallons. The commission needs contracts for only 30,000,000 gallons to enable it to start the development. President Mahlon R. Hoagland of the commission said that the needs of Newark would compel the commission to go ahead with its plans as soon as possible. Representatives of municipalities interested in the development of Wanaque joined the commission in an inspection of the territory included in the project.

Meanwhile Paterson, Passaic and Montclair have engaged Prof. E. W. Bemis to make accurate and impartial appraisal of the value of the holdings and plant of the East Jersey water company. Edward F. Merrey, counsel for Paterson, pointed out that there is no specific law permitting a bond issue to acquire in co-operation with other municipalities the East Jersey plant. There is no existing law permitting joint operation of the plant. There is a question also, it appears, whether three municipalities can join, under present laws, to buy or condemn a water plant. New legislation will probably have to be sought to make the East Jersey system part of the general supply plant.

East Orange will not enter the Wanaque plan. The water commission decided that the city could save a half million dollars by developing its present source instead. Mayor Warrall F. Mountain indorsed the stand. The commissioners believe that East Orange is in a position to take care of its needs until 1925 or 1930 and that while the present plant will supply 3,500,000 gallons daily, it is possible to increase the output to 7,500,000 gallons and that the water would be of a better quality than the Wanaque supply.

A referendum at which the citizens of West Orange will vote upon the proposition to purchase the water distributing system now in use there for a price not to exceed \$300,000, will be held on August 16. This was agreed upon by the town council following a study of the report of William B. Fuller, consulting engineer, who advises the purchase of the system, which he believes to be worth \$201,000. Carroll P. Bassett, president of the West Orange Water Company, has stated the figure demanded would be nearer \$300,000. The water company failed to put in a definite proposition.

STREET LIGHTING AND POWER

Milwaukee's Proposed Lighting System.

Milwaukee, Wis.—Members of the common council are urged in a report submitted by Commissioner of Public Works Simmons to give full consideration to the plans for Milwaukee's proposed municipal street lighting system as outlined by Engineer F. A. Vaughn, who recently completed a survey. The commissioner agrees with Mr. Vaughn that consideration be given the recommendation that the city secure absolute ownership of the distributing system and also that a contract be entered into for the purchase of electric current and for the purchase of as much gas as may be required; also that a bureau or division of lighting be created within the department of public works and that this bureau shall have charge of the maintenance of the entire street lighting system. Commissioner Simmons suggests that public hearings be held in connection with the proposed plan of a municipal lighting system. In a supplementary report filed by Engineer Vaughn the estimated cost of installation and equipment of 8,500 street lights is placed at \$1,279,646, of which \$667,547 is for equipment.

City Offers Price for Gas Plant.

Kalamazoo, Mich.—Mayor James B. Balch and the city aldermen took their final and rather novel stand on the gas plant purchase situation, when it was voted to offer the Kalamazoo Gas company restricted arbitration, with a limit price of \$975,000, the limit set by William Newbigging, the English expert. As the city first offered a flat price of \$821,000 for the gas company's holdings and were refused, the real arbitration price will lie between the

said \$821,000 and the \$975,000 set as a limit in the arbitration terms. The gas company considers value of the holdings as \$1,875,000. This is held by the city officials to include the value of the good will, the franchise value and a number of other intangible assets.

Binghamton's Gas and Electricity.

Binghamton, N. Y.—After passing an ordinance, having it vetoed by the mayor, repassing it over the veto and then repealing it, the council has again passed it, authorizing the sale of \$148,200 bonds for a municipal electric light plant. The Binghamton Light, Heat and Power Company has been active in trying to prevent the erection of the municipal plant. Meanwhile, after a fight began in March, 1913, a new schedule of rates for gas has been forwarded to the public service commission by the Binghamton Gas Works. The rates provide dollar gas, and a minimum charge of 50 cents a month for all consumers who have meters, whether they use any gas or not. The common council will not contest the rates. Manager Bennett of the company stated that the reduction of 10 cents per thousand will act to the benefit of 97 per cent of the customers while the minimum rate will raise the bills of only an average of less than 200 customers a month.

FIRE AND POLICE

Ohio Cities to Co-operate in Fire Fighting.

Columbus, O.—Fire chiefs and mayors of a dozen cities, neighbors of Columbus, within a radius of 50 miles, at a conference here have endorsed a plan of co-operation whereby all will be put in readiness to help each other in fighting serious fires. With Chief Lauer as head of the tentative organization of the cities it is planned to have a standardized hose system. The Ohio State Fire Prevention Association was instrumental in bringing about the conference. The association's plan is to make the community standardization general throughout the state, if the Columbus experiment proves successful.

Policewoman for Paterson.

Paterson, N. J.—Mrs. Belle Headison, who has been a dance hall inspector, found trouble in enforcing her authority on several occasions so the police and fire commissioners have made her a policewoman to serve without pay. She will not have to wear a uniform but she will have a police badge and authority to go armed.

New Oil Fire Extinguisher.

Chester, Pa.—The official test of the new chemical preparation, "Foamite," for the extinguishing of oil tank fires at the plant of the Crew-Levick Oil Company, was successful. The solution is the invention of W. W. Walker, a fire protection engineer in Camden, N. J. The city officials and representatives of a large number of oil companies and insurance companies, witnessed the very exciting test. A handful of blazing waste was dropped into an 80,000 gallon tank of oil. After the tank had become enveloped for ten minutes in a mass of flames the fire was extinguished in two minutes by the frothy fluid pumped into it. A huge pile of oil barrels and oil-soaked timbers was quenched in three minutes by means of the solution from a fire hose.

Poughkeepsie's \$250,000 Fire.

Poughkeepsie, N. Y.—One of the most destructive fires in the history of Poughkeepsie completely destroyed the local plants of Armour and Company, Nelson-Morris and Company, and the large lumber yard and mill of D. W. Wilbur, mayor of the city. The origin of the fire is unknown. The loss is estimated at a sum in excess of \$250,000. The flames were first discovered in the vicinity of the barn on the Wilbur property. Before an alarm could be turned in and the department reach the scene the conflagration had reached such a stage that it was impossible for the firemen to do any good. The entire attention of the department, under Chief Wood, was directed to saving adjoining properties. The firemen had a

desperate battle lasting from 8.30 at night until after sunrise, and succeeded in saving the adjoining properties. Lack of sufficient water pressure greatly handicapped the firemen.

MOTOR VEHICLES

Speed Laws for Apparatus.

Richmond, Va.—If fire engines, except in "cases of compelling necessity," exceed the speed limit as fixed by city ordinances and thereby injure persons or property the city cannot be held liable but individual drivers and chauffeurs of the fire apparatus may be sued for damages. This is the effect of an opinion rendered to the fire department by the assistant city attorney. The opinion is incidental to claims for damages filed against the city, resulting from collisions when fire apparatus, driven at high speed, became uncontrollable and crashed into a warehouse wall in the first instance and into a delivery wagon in another. The fire department is not considered one of the city's agents, and while, by special ordinance provisions, fire apparatus is given the right of way and is not restricted as to speed, the assistant city attorney holds that drivers and chauffeurs must exercise common sense or stand the consequences.

Chemical and Hose Truck in Commission.

Millville, N. J.—The new American-La France chemical and hose wagon has been accepted following good tests by Mayor Geig, Commissioner Corson and Chief Ludlam. The truck has double chemical tanks and two hundred feet of hose. The machine is equipped with Goodyear tires.

New Engine Accepted.

Galveston, Tex.—Following very satisfactory tests by Chief J. H. Gernand, the new American-La France hose and pumping machine has been accepted and put into service. The apparatus is a type "15," 200-horsepower motor fire engine, with pump rating of 1,400 gallons of water per minute at 120 pounds pump pressure. This is the third motor fire engine for the local department.

Dump Truck for Public Works Department.

North Adams, Mass.—The city has purchased for the use of the public works department a five-ton Pierce-Arrow hydraulic power dump truck. This is the city's first experience in the use of motor driven trucks in its public works department. The department expects much greater efficiency in its work now as heretofore, handicapped by slow transportation of material, road work in one section of the city has had to wait upon the completion of a job somewhere else. With the motor truck it is expected that building or repairing material can be quickly transported to different sections, and that consequently two or more gangs can be kept simultaneously. The truck is also expected to do away with hand spreading of material on the street.

GOVERNMENT AND FINANCE

Probing New York City's Finances.

New York, N. Y.—Senator Brown's legislative investigating committee is to begin its investigation of the city's finances. Mayor Mitchel and Comptroller Prendergast will be the star witnesses, while the other members of the Board of Estimate and various other officials will be summoned before the committee. It is proposed to determine once and for all to what extent the city is responsible for the enormously increased debt of Greater New York and the size of the annual budget, and to what extent the legislature can be blamed. An attempt will be made to show that an unwarranted slur was cast on the last legislature by various city officials in an attempt to justify the city's financial condition. The probers will attempt to make the officials admit that everything to do with the increasing burden of taxation either originated in the city or was accepted by it, with but very few exceptions. Some of the lines to be followed in the questioning are the following: What will be the total cost of the proposed new circular court house for New York County? Are there not many extravagances in the plans,

even as amended? What has been the cost to the city of maintaining the Court House Board? What was the total cost of the foundations of the Municipal Building? It is asserted this has never been announced and has a direct bearing on the cost of the new court house. An explanation will be asked of the detailed methods of borrowing money for the city, both for temporary and permanent use. An explanation will be sought as to why the city needed to pay a commission of \$1,600,000 to put through its \$80,000,000 loan last year. The city officials will be asked if the Commissioners of Accounts really serve any useful purpose.

With a new regime in complete control, the Tax Board is this year planning to make increases in the assessments in various parts of the Greater City which may total \$150,000,000. Real estate men are pointing out as a remarkable coincidence the fact that property owners are fighting the courts for reductions in this year's assessments which total about the same sum by which it is now proposed to increase the values for next year.

Selling "Baby Bonds" by Mail.

Chicago, Ill.—The city comptroller has entered the mail order business in the sale of municipal bonds. The \$50,000 mark was reached in the sale of "baby bonds"—securities in denominations of \$100—by Louis E. Goselin, deputy comptroller.

City Finance Statements.

Wilmington, N. C.—Capt. Thomas D. Meares, city clerk and treasurer, has issued a statement of the total expenditures of the different departments for the fiscal year which ended June 1. The statement showing total appropriations for year, amounts audited, unexpended and overdrawn, follows:

General Expense Account—Appropriation for year, \$26,130; audited, \$26,139.24; unexpended, \$3,588; overdrawn, \$3,597.24; actual amount overdrawn, \$9.24.
Police—Appropriation for year, \$46,571; audited, \$48,776.33; unexpended, \$928.60; overdrawn, \$3,133.94; actual amount overdrawn, \$2,205.33.
Fire—Appropriation for year, \$39,070; audited, \$39,785.55; unexpended, \$889.65; overdrawn, \$1,605.23; actual amount overdrawn, \$1,558.
Streets and Wharves—Appropriation for year, \$48,358; audited, \$66,541.10; unexpended, \$1,783.93; overdrawn, \$19,967.03; actual amount overdrawn, \$18,183.10.
Street Lighting—Appropriation for year, \$18,019; audited, \$1,357.65; unexpended, \$1,187.89; overdrawn, \$506.54; actual amount unexpended, \$681.35.
Health and Hospitals—Appropriation for year, \$26,679; audited, \$27,165; overdrawn \$486.
Deep Wells—Appropriation for the year, \$2,500; audited, \$1,883.55; unexpended, \$616.45.
Markets—Appropriation for year, \$1,850; audited, \$1,550.86; unexpended, \$309.08; overdrawn, \$9.94; actual amount unexpended, \$289.14.
Coupon and Interest Account—Appropriation for year, \$98,000; audited, \$101,489.12; unexpended, \$1,566.25; overdrawn, \$5,055.37; actual amount overdrawn, \$3,489.12.
Totals—Appropriation for year, \$307,177; audited, \$330,668.40; unexpended, \$10,869.89; overdrawn, \$34,361.29; actual amount overdrawn, \$23,491.40.
In addition to the above the following items have been audited: Water and sewerage (operating), \$70,925.43; sewer construction, \$10,454.36; special work, \$11,062.97; Fourth street paving, \$15,544.81; new fire building, \$7,751.42; street construction, \$9,613.24; miscellaneous, \$25; Market street, \$49,768.56; tax refund, \$348.84; park, \$776.86; scavenger, \$10,873.87; loss and damage, \$679; sidewalks, \$189.14; back taxes, \$284.45; bond redeemed, \$5,000; notes paid, \$510,500. Total amount audited, \$1,034,466.44.

Kansas Cities' Finances.

Topeka, Kan.—Bond issues certified to W. E. Davis, state auditor, during the year ending June 30, indicated a prosperous season for Kansas municipalities. Internal improvement, refunding, bridge, utility, funding and school bonds during the twelve months reached a total of \$6,151,976.46. The big issues came mainly from the towns of the state which are making extensive improvements. The internal improvement issue for the year reached a total of \$2,154,473.84. This money was used for paving, curbing, grading, sewers, boulevards and parks. Public utility bonds for the year amounted to \$1,529,657.65. This money was used for all public utility purposes, such as light and water plants. A school bond issue of \$626,491.87 was also recorded—or more than \$50,000 a month for new schools in the state. Refunding bonds amounted to \$534,240.50. Bridge bonds reached a total almost equal to money appropriated for school purposes. This department shows a bond issue of \$615,787 for bridges during the year; small bridges built without floating bonds are not included in the

amount and means that the state has gone extensively into the permanent bridge building business. Bonds for miscellaneous purposes—railroad aid, city hall, drainage and rock roads—amounted to \$592,306.06. Funding bonds for the year reached a total of \$117,319.87. The year's record shows 238 bond issues in the state and total certificates of 10,112 bonds filed with the state department. Topeka missed by one day an opportunity to make a big showing in the report. Her total issue for the year is given at \$73,301.97. July 1, the day following the closing of the report, the city certified with the state an issue of \$136,700. While this issue is not included in the report the showing for Topeka during the year was in reality an issue of \$210,001.97. Kansas City, Kan., made the record showing in the state with certificates showing 21 bond issues of 1,992 bonds for a total of \$943,246.85, or nearly one-tenth of all bond issues filed with the state auditor and nearly 15 per cent of the total for the state.

To Test White Plains Charter.

White Plains, N. Y.—At a meeting of thirty property owners of the town of White Plains, outside of the village of White Plains, it was decided to test in the courts the constitutionality of the White Plains city charter. The property owners object to being included in the proposed city declaring that they now have large acreage lands assessed as such which may be assessed on a lot basis in the proposed city. The village actually becomes a city Jan. 1 next.

Decreasing City Expenses.

Fort Smith, Ark.—City Clerk George Carnall's comparative statement of the money paid out in the different departments of the city for the last four fiscal years, shows that in point of economy the fiscal year just closed leads. For the year ending the last of June, 1915, the city's expenditures were \$223,624.21, while in 1914 the expenses amounted to \$224,232.34; in 1913, \$275,282.78, and in 1912, \$233,690.90. In most of the departments a material reduction in expense without a lessening of efficiency is shown.

RAPID TRANSIT

Detroit's Railway Purchase.

Detroit, Mich.—A contract for the purchase of the lines of the Detroit United Railway within the one-fare street car zone, so-called, whereby the city may obtain control of the system at a price to be fixed by the circuit judges of Wayne County, has been approved by the board of street railway commissioners. The plan of purchase provides that the city pay for the property from the earnings of the street car system. The city, according to the contract, shall assume the mortgage liabilities, up to the amount of the purchase price. If the price fixed by the judges does not cover the entire mortgage debt, it is provided that the Detroit United Railway pay the balance when due. These mortgages are payable at different times, the first totaling \$1,000,000, to be met June 1, 1916. The great bulk of the debt is payable in 1932. The city obligates itself for 2 per cent of the assessed valuation of Detroit, which is about \$11,000,000.

Wisconsin State Regulation of Jitneys.

Madison, Wis.—The Wisconsin assembly by a vote of 51 to 20 has concurred in the senate bill providing for state regulation of jitney busses by the state railroad commission. The bill affects 4,000 jitneys in the state. It now awaits Governor Philipp's approval. The measure declares jitneys to be common carriers and provides that they shall not be operated except by permit issued by the state railroad commission. A jitney owner is required to file with his application for a permit a bond, to be conditioned on the payment of damages for personal injuries or death in a sum not to exceed \$5,000 to any one person, or \$10,000 for any accident caused by negligent use or operation. The railroad commission is to determine whether the rate is reasonable.

Federal District Court Decides Against Jitneys.

Memphis, Tenn.—Operations of jitneys must be placed under police regulations and individual owners of jitneys can be classed as common carriers, according to an opinion rendered by Judge McCall, of the federal district court at Memphis, and concurred in by Judge Sanford of Knoxville and Judge Warrington of Cincinnati. Lawyers for Memphis jitney owners filed suit two months ago claiming police regulation forcing each owner to make liability bond was in violation of the fourteenth amendment of the United States constitution.

Jitneys Win in Indiana.

Indianapolis, Ind.—The public service commission has entered an order dismissing the petition of the Terre Haute, Indianapolis & Eastern Traction Company, which sought to bring all jitney busses in the state under the control of the commission and subject to regulation by the commission. Three attorneys for the traction companies argued that the jitneys were common carriers and public utilities within the meaning of the utility law, and ought, therefore, to be regulated. The commission stated that it had no jurisdiction and therefore dismissed the case. The case before the commission was filed by the traction company, and later the petitioner was joined by several other electric roads in Indiana that now compete with the jitneys. While the original petition related only to Terre Haute, the hearing on the proposal to place all jitneys under the regulation of the commission brought in the entire question of jitney competition with electric roads throughout Indiana. Prominent public utility magnates from all over the state attended the hearings.

Mayor Invents Car Fender.

Bangor, Me.—Mayor Robinson has received from Washington a patent on a new style of fender designed for use on trolley cars. The fender is designed to act automatically and to keep the victim of the accident from getting underneath it. The fender extends in front of the car when in use or can be folded against the dashboard out of the way. When dropped in place it is instantly tipped by coming in contact with any object and descends to the track or any desired height above the track to which it may be adjusted. In actual tests with dummies of various sizes before the Board of Public Safety of Massachusetts the fender worked finely, performing every feat which had been claimed for it. The device is soon to be marketed.

Philadelphia Jitney Ordinance Suspended.

Philadelphia, Pa.—Jitneys may be operated until September 20 without the necessity of complying with the provisions of the regulating ordinance, which recently was passed by councils, signed by the mayor and which had gone into effect. Judge Sulzberger granted the preliminary injunction, sought by the Auto Service Association through its council, former Mayor John Weaver. This will restrain the city officials from enforcing the legislation which the jitney men contended would drive them out of business. Judge Sulzberger held that the zone ordinance might work grave injury to the jitney men. Councils will meet early in September before the date set by Judge Sulzberger, when a hearing may be held before the three judges of Common Pleas Court No. 1 as to whether the injunction shall be made permanent. Meanwhile the jitney men are planning to wage a campaign to enlist public sympathy for their cause in the hope of so influencing councils that the ordinance may be so amended that it will not drive them from the streets. Already six-for-a-quarter strip tickets have been adopted by jitneys and the Automobile Service Association and the South Philadelphia Jitney Owners' Association, representing more than 800 cars. The tickets will be issued immediately and in the near future, it is believed, they will be adopted also by the drivers of the Philadelphia Jitney Association. The effect of the injunction is that the police cannot enforce the ordinance during the summer and that the jitneymen need not file bonds of \$2,500 each, pay a license fee of \$50 and run for five cents along specified routes.

LEGAL NEWS

A Summary and Notes of Recent Decisions—
Rulings of Interest to Municipalities**Improvement Ordinances—Street Grade.**

City of Highwood v. Chicago & M. Electric R. Co. et al.—An ordinance for street paving is not objectionable as failing to determine the grade of the street by reference to any definite datum, where direct reference is made to city datum.—Supreme Court of Illinois, 109 N. E. R., 270.

Powers of Municipal Corporation—Delegation of Authority.

District of Clifton in Campbell County v. Cummins.—The measure of power conferred upon municipal corporations is subject to legislative discretion, and in the absence of an express delegation or a necessary inference from some express power, the municipality has no authority to act.—Court of Appeals of Kentucky, 177 S. W. R., 432.

Obstructions in Streets—Rights of Abutting Owner.

Rogers v. City of New London.—An abutting owner being presumed to own the land in a highway in front of her property, such owner need not remove steps leading to the sidewalk, where they do not obstruct public travel, though they are within the highway limits.—Supreme Court of Errors of Connecticut, 94 A. R., 364.

Streets—Rights of Abutting Owners.

Hall v. House of St. Giles, the Cripple.—Since the power and duty to maintain and care for streets in their primary use is continuous, the Legislature may not be questioned in its exercise, and under it a property once acquired for street purposes may have added burdens and limitations placed thereon, even though private detriment results.—Supreme Court, Special Term, Kings County, 154 N. Y. S., 96.

Offices—Abolition—Acquiescence.

Wilkinson v. City of Birmingham.—Where plaintiff, who was police recorder, remained entitled to the salary of that office because it was abolished by resolution instead of by ordinance, the fact that he took no action during the 18 months which remained of the term for which he was elected to test the validity of the abolition, as well as that he practiced law and appeared in cases which would have fallen within his jurisdiction had not his office been abolished, may be considered on the question of his acquiescence.—Supreme Court of Alabama, 68 S. R., 999.

Councilmen—Election of Successor—Validity.

Commonwealth ex rel. Whitehouse, District Attorney v. Krapf.—Where a borough councilman who had resigned voted for a resolution accepting his resignation and appointing a successor, which resolution was passed by a majority of one, the attempted election of his successor was invalid; the election of a successor being unauthorized until the retiring councilman's resignation was effected, and it being essential that his vote, even if his resignation were accepted by the resolution, be excluded in determining whether the person named therein was elected as his successor.—Supreme Court of Pennsylvania, 94 A. R., 553.

Contracts of Police Commissioners—Statute.

Thrift, city comptroller, v. Ammidon et al., Board of Police Commissioners.—Contracts made by the board of police commissioners are not subject to the provisions of section 14 of the city charter of Baltimore (Code Pub. Loc. Laws, art. 4, as amended by Laws 1912, c. 429, providing that in contracting for any public work or the purchase of any supplies involving an expenditure of \$500 or more for the city, or by any of the city departments, sub-departments, or municipal officers not embraced in a department, or special commissions or boards, unless otherwise provided, advertisements for proposals shall be first published in daily newspapers published in Baltimore city twice or oftener, the first publication to be made not less than 10 or more than 20 days prior to the opening of bids, as the board of police commissioners is not included within those mentioned.—Court of Appeals of Maryland, 94 A. R., 532.

Obstruction in Street—Permit to Maintain—Effect.

Hartman v. Lowenstein et al.—One maintaining, without permit of a city, an obstruction in a street, maintains an absolute nuisance; but one obtaining a city permit, expressly or impliedly, and complying therewith, is not liable, and to create liability for injury caused by the obstruction it is necessary to show failure to properly construct and maintain the same.—Supreme Court, Appellate Term, First Department, 154 N. Y. S., 205.

Defects in Streets—Liability.

Browning v. City of Aurora.—A city which had constructed and maintained a wooden culvert as part of the roadway of a street could not gainsay the right of the public to use it as a footway nor escape liability for its neglect to keep it in a reasonably safe condition; but the same degree of care was not required in maintaining such footway as would be required in a populous part of the city as to its regularly constructed sidewalks.—Springfield Court of Appeals, Missouri, 177 S. W. R., 685.

Torts of Servants—Retention of Another's Property—Liability.

Armstrong and Latta v. City of Philadelphia.—Where a city undertakes to construct and operate a filtration plant to supply water to its inhabitants, it is exercising a business, as distinguished from a governmental function, and the maxim respondeat superior applies to the acts of its officers and agents in exercising such functions; and therefore it cannot avoid liability for the wrongful acts of its servants in holding what they believe to be the city's property.—Supreme Court of Pennsylvania, 94 A. R., 455.

Councilmen—Election—Void.

Commonwealth ex rel. Weaver v. Clark et al.—Under Act May 22, 1895 (P. L. 109), requiring that the electors in an election for borough councilmen, some of which are elected for full terms and some for unexpired terms, designate on their ballot for whom they vote to fill the unexpired terms, an election to fill four vacancies for the full term and one vacancy for an unexpired term was void, where the ballots contained no designation of the terms and the names of the candidates, due to a mistaken belief that there were six vacancies, and were printed with directions to vote for six.—Supreme Court of Pennsylvania, 94 A. R., 473.

Bonds—Bona Fide Purchasers—Evidence.

Dinet v. Rapid City, S. D.—In an action on municipal bonds, defended on the ground that they were illegal, because in excess of the constitutional limit of indebtedness, and issued as a donation to a railroad company, while on their face issued for the purpose of funding a valid indebtedness, testimony of a witness that he had a conversation with plaintiff, prior to the election voting the bonds, at which time plaintiff made statements as to the necessity of carrying the election, was proper on the issue that he was not a purchaser in good faith of the bonds.—Circuit Court of Appeals, Eighth Circuit, 222 F. R., 497.

Contracts—Stipulations—Powers of Chief Engineer.

Croton Falls Construction Co. v. City of New York.—A stipulation in a contract for the construction of the Croton Falls reservoir, initiated under the original aqueduct commission, and after abolition thereof completed by the department of water supply, gas and electricity of the city of New York, that to prevent disputes the engineer shall determine the amount, quality, acceptability and fitness of the several kinds of work and materials which are to be paid for under the contract, and shall determine all questions as to the work and the construction thereof, and decide every question as to the fulfillment of the contract, and that his estimate and decision shall be final, and that he shall make necessary explanations as to the meaning of the specifications and give orders contemplated by the contract, gives the acting chief engineer, in the absence of the engineer, power to order the construction of particular work within a class specified in the contract, and determine the nature and kind of work so done, so as to enable the contractor to be paid at the price fixed for that class of work.—Supreme Court, Appellate Division, First Department, 154 N. Y. S., 76.

NEWS OF THE SOCIETIES

Calendar of Meetings.

Aug. 2-6.

GOOD ROADS CONGRESS.—San Francisco, Cal., under the auspices of the Tri-State Good Road Association.

August 2-7.

AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE.—University of California, Berkeley, Cal. Secretary, Dr. L. O. Howard, Smithsonian Institute, Washington, D. C.

Aug. 3-5.

OHIO STATE FIREMEN'S ASSOCIATION.—Annual Convention, Bellaire, O.

Aug. 3-5.

WISCONSIN PAID FIREMEN'S ASSOCIATION.—Annual Convention, Marinette, Wis. Secretary, Ole Norman, Fire Dept., Superior, Wis.

Aug. 4-5.

TEXAS GOOD ROADS ASSOCIATION AND COUNTY JUDGES' AND COMMISSIONERS' ASSOCIATION.—Midsummer meeting, Agricultural and Mechanical College of Texas, College Stat., Tex. Secretary, Texas Good Roads Assoc., D. E. Colp, San Antonio.

August 11-13.

AMERICAN STATISTICAL ASSOCIATION.—San Francisco, Cal. Secretary, Prof. C. W. Doten, Massachusetts Institute of Technology, Boston, Mass.

August 11-14.

AMERICAN ECONOMIC ASSOCIATION.—San Francisco, Cal. Secretary, A. A. Young, Ithaca, N. Y.

Aug. 18-19.

CONNECTICUT STATE FIREMEN'S ASSOCIATION.—Annual Convention, New Haven. Secretary, Chief R. V. Magee, Watertown, Conn.

Aug. 18-19.

MONTANA STATE FIREMEN'S ASSOCIATION.—Annual Convention, Lewistown.

Aug. 24-27.

PROVINCIAL ASSOCIATION OF FIRE CHIEFS.—Annual Convention, Ottawa, Ont. Secretary, Chief James Armstrong, Kingston, Ont.

August 24-27.

INTERNATIONAL ASSOCIATION OF MUNICIPAL ELECTRICIANS. Twentieth Annual Convention, Gibson Hotel, Cincinnati, O. Secretary, Clarence R. George, Houston, Tex.

August 24-27.

SECOND NATIONAL CONFERENCE ON UNIVERSITIES AND PUBLIC SERVICE.—Boston, Mass. Secretary, Edward A. Fitzpatrick, Box 350, Madison, Wis.

Aug. 31-Sept. 3.

INTERNATIONAL ASSOCIATION OF FIRE ENGINEERS.—Annual Convention, Cincinnati, O.

September 6-13.

INTERNATIONAL HEALTH CONGRESS, to meet with the American Public Health Association, the 15th annual conference of the New York State Health Department and the New York State Sanitary Officers' Association.—Rochester, N. Y.

Sept. 7-9.

NEW ENGLAND WATERWORKS ASSOCIATION.—Annual Convention, New York City. Secretary, Willard Kent, 715 Tremont Temple, Boston, Mass.

Sept. 7-9.

NATIONAL FIREMEN'S ASSOCIATION.—Annual Convention, Rockford, Ill. Secretary, W. F. Gillooley, Davenport, Ia.

Sept. 13-19.

PAN-AMERICAN ROAD CONGRESS.—Held by American Road Builders' Association and the American Highway Association. Oakland, Cal.

September 16.

PACIFIC HIGHWAY ASSOCIATION.—Annual Convention, San Francisco, Cal. President, Samuel Hill, Maryhill, Wash.

September 16-18.

AMERICAN SOCIETY OF CIVIL ENGINEERS. Convention, San Francisco. Secretary, Charles W. Hunt, 220 West 57th St., New York City.

Sept. 16-18.

AMERICAN ELECTROCHEMICAL SOCIETY.—Twenty-eighth annual general meeting, San Francisco. J. M. Muir, 239 West 39th street, New York City, Chairman of Transportation Committee.

September 16-18.

AMERICAN SOCIETY OF MECHANICAL ENGINEERS. Convention, San Francisco. Secretary, Calvin W. Rice, 29 West 39th St., New York City.

September 16-18.

AMERICAN INSTITUTE OF ELECTRICAL ENGINEERS. Convention, San Francisco. Secretary, F. L. Hutchinson, 29 West 39th St., New York City.

September 16-25.

INTERNATIONAL ENGINEERING CONGRESS.—Am. Soc. C. E., Am. Inst. Min. E., Am. Soc. Mech. E., Am. Inst. E. E. and Soc. N. A. & M. E., San Francisco, Cal. Secretary, W. A. Catell, Foxcroft Building, San Francisco, Cal.

Sept. 22-24.

MASSACHUSETTS STATE FIREMEN'S ASSOCIATION.—Annual convention, Haverhill, Mass. George Wilson, Lynn, Mass., Chairman of Committee.

September 27-30.

SAFETY CONFERENCE. San Francisco.

Sept. 27-Oct. 1.

PACIFIC COAST FIRE CHIEFS' ASSOCIATION.—Annual Convention, San Francisco. Secretary, Harry W. Bringham, Fire Marshal, Seattle, Wash.

September 27-October 1.

INTERNATIONAL GAS CONGRESS AND AMERICAN GAS INSTITUTE. Convention, San Francisco. Secretary, George C. Ramsdell, 29 West 39th St., New York City.

Sept. 29-Oct. 1.

MASSACHUSETTS STATE FIREMEN'S ASSOCIATION.—Thirty-sixth Annual Convention, Haverhill. Secretary, D. Arthur Burt, Taunton.

October 4-9.

AMERICAN ELECTRIC RAILWAY ASSOCIATION. Convention, San Francisco. Secretary, E. B. Burritt, 8 West 40th St., New York City.

Oct. 5-8.

PENNSYLVANIA STATE FIREMEN'S ASSOCIATION.—Annual Convention, Philadelphia. President, Miles S. Humphreys, Pittsburgh, Pa.

Oct. 11-15.

NATIONAL PAVING BRICK MANUFACTURERS' ASSOCIATION.—Annual Convention, Dayton, O. Secretary, Will P. Blair, B. of L. E. Bldg., Cleveland, O.

October 12-15.

AMERICAN SOCIETY OF MUNICIPAL IMPROVEMENTS.—Annual Convention, Dayton, O. Secretary, Charles Carroll Brown, 702 Wulsin Bldg., Indianapolis, Ind.

November 17-19.

NATIONAL MUNICIPAL LEAGUE.—Annual Convention, Dayton, O. Secretary, Clinton Rogers Woodruff, 705 North American Bldg., Philadelphia, Pa.

Dec. 27-Jan. 8, 1916.

SECOND PAN-AMERICAN SCIENTIFIC CONGRESS.—Washington, D. C., Department of State, Washington.

February 15-18, 1916.

SECOND NATIONAL CONFERENCE ON CONCRETE ROAD BUILDING.—Secretary, J. P. Beck, 208 S. LaSalle St., Chicago, Ill.

Pan-American Road Congress.

The Pacific Highway Association has changed the date of its annual convention in order that the association and its members may co-operate during the week in the work of the Pan-American Road Congress. The convention was originally scheduled for a date in August, but it has now been fixed for Thursday, September 16, at San Francisco. It is understood that the sessions have been so arranged as not to conflict with those of the Congress.

The same day, Wednesday, September 15, has been announced as Pan-American Road Congress Day, at the Panama-Pacific Exposition, and the sessions will be held at Festival Hall, on the Exposition grounds, instead of at Oakland, where the sessions will be regularly held.

The officers of the Pacific Highway Association are: Samuel Hill, president, Maryhill, Wash.; Henry L. Bowlby, executive officer, Portland, Ore. The senior vice-presidents are: For Washington, Norman H. Abrams, of Seattle; for Oregon, Frank B. Riley, of Portland; for California, Mrs. A. B. Spreckles, of San Francisco, and F. W. Jackson, of San Diego.

The Pan-American Road Congress is being organized under the auspices of

the American Road Builders' Association and the American Highway Association, acting jointly. Previously they have held separate annual conventions. Cooperating with them on the Pacific Coast will be the Tri-State Good Roads Association and the Pacific Highway Association.

The executive committee of the Pan-American Congress consists of Governor Charles W. Gates of Vermont, chairman, Franklin, Vt.; Major W. W. Crosby, Program, Munsey Building, Baltimore, Md.; James H. MacDonald, Finance, New Haven, Conn.; J. E. Pennybacker, Arrangements, Willard Building, Washington, D. C., and E. L. Powers, Publicity, 150 Nassau street, New York.

New York State Health Conference.

Plans have been completed for the holding of the 15th annual conference of the New York State Department of Health as a part of the International Health Congress which takes place in Rochester during the week beginning September 6. On the evening of that day the health congress will be opened by the State Department with a public meeting. Dr. Herman M. Biggs, State Commissioner of Health, will preside, and Dr. George W. Goler, Rochester's health officer, will probably welcome the 1,200 or more delegates to the city. It is expected that addresses will be delivered by Surgeon General W. C. Gorgas and former Ambassador David Jayne Hill.

Tuesday will be devoted to sectional meetings of the health officers of the state under the chairmanship of the various sanitary supervisors. Among the subjects of most popular interest to be discussed in the different sections will be "Diphtheria Carriers and the Methods of Treating Diphtheria," "Early Recognition of Tuberculosis in Rural Communities," and other phases of the tuberculosis problem; problems concerning milk and water supplies in rural and village communities. "Practical Methods of Sewage Disposal for Rural Communities," "The Control of Whooping Cough and Measles," "The Dairy and Diseases," "The Preventable Diseases of Old Age," "Sanitary Survey of Country Homes," "Sewage Disposal in Villages," "What Shall Be Done With the Tubercular at Summer Hotels and Boarding Houses?" "The Protection of Food Supplies," "Industrial Diseases of a Small City," "Rural Mortality," "Clean-Up Work and What It Means to Public Health."

All these section meetings will be held in Mechanics' Institute and will be open to the general public. As one of the objects of the Health Congress is the interest of the public in health work, the program has been planned so that it will be of popular interest.

On the mornings of Tuesday, Wednesday and Thursday, there will be a series of laboratory demonstrations, open only to a limited number of those in attendance at the congress. These demonstrations will be con-

ducted by Dr. A. B. Wadsworth, director of the division of laboratories and research of the State Department of Health. On Tuesday morning there will be a tuberculosis clinic and an infant welfare clinic, the latter under the direction of Dr. H. L. K. Shaw, director of the division of child hygiene of the State Department of Health.

On Wednesday morning there will be, in addition to the laboratory demonstration, two tuberculosis clinics, one conducted by Dr. S. A. Knopf, and one by Dr. Montgomery E. Leary, Superintendent of Iola Sanatorium. On Thursday morning there will be, in addition to the laboratory demonstration, a second tuberculosis clinic and second infant-welfare clinic.

In addition to this special program the sanitary officers of the state will be required to attend the three general meetings of the American Public Health Association, dealing with "Public Health Education," "The Death Rate of the Higher Age Group," and "Milk"; and also two sessions of the municipal health officers' sections, dealing with rural hygiene and the control of communicable diseases.

Another organization meeting with the Congress and closely allied to the (Continued on page 202.)

PERSONALS

Governor Brumbaugh of Pennsylvania, has appointed State Highway Commissioner Robert J. Cunningham and Chief Engineer William D. Uhler as delegates to the Pan-American Congress to be held in California in September. He has also invited Dr. W. D. Martin of California, Washington County, who is the father of the "Good Roads Day" idea in Pennsylvania, and A. P. Irwin of Chadds Ford Junction, Chester County, to be delegates representing the citizens of the State at the Congress.

The firm of Worley & Black, consulting engineers, Reliance Bldg., Kansas City, Mo., has moved to offices in the new Inter-State Bldg., corner 13th and Locust. After Aug. 1, the firm is to be known as Black & Veatch, consulting engineers. Mr. J. E. Worley resigned from the firm of Worley & Black, Jan. 1, 1914, in order to give his entire time to the Interstate Commerce Commission's railway valuation work. Mr. E. B. Black has been with the firm since its organization in Kansas City in 1909, and Mr. N. T. Veatch, Jr., whose name now appears in the firm name, has been with it four years. Mr. Veatch formerly was assistant engineer of the Kansas State board of health and for a year and a half was with the American Water Works and Guarantee Co., of Pittsburgh, owners and operators of public utilities.

Colburn, E., has been elected city manager and J. E. Bylling, police chief of Snohomish, Wash.

Duffield, Glenn, has been appointed chief of police of Denver, Col., succeeding Felix O'Neill, resigned.

Gannett, Farley, chief engineer of

the Pennsylvania Water Supply Commission, has resigned to engage in private business.

High, D. C., has been appointed chief of police of Louisville, Ky.

Hurley, P. J., acting chief of the Holyoke, Mass., fire department, has been appointed chief with D. J. McLean as first deputy chief.

The following officials have been elected:

Magnolia, N. J.—H. B. Wolohon, mayor; councilmen, Edward J. Duffield, John A. Pritchard, Howard Cheesman, C. J. Rulon, William H. Morris and William J. Lewis.

Helena, Mont.—Lincoln Working, mayor; A. E. Cumming, commissioner of streets and president of the council; W. J. Bickett, commissioner of public safety.

Eureka, Tex.—Elijah Falk, mayor.

Greenville, S. C.—S. S. Webb, mayor.

LITERATURE

PUBLICATIONS RECEIVED.

Vitrified Brick Pavements for Country Roads. (U. S. Department of Agriculture, Bulletin 246.) By Vernon M. Peirce and Charles H. Moorefield. Office of Public Roads, Washington, D. C.

Wind Stresses in the Steel Frames of Office Buildings. Bulletin 80. By W. M. Wilson and G. A. Maney. Engineering Experiment Station, University of Illinois, Urbana, Ill.

BOOK REVIEWS.

MUNICIPAL ACCOUNTING. By DeWitt Carl Eggleston, M. E., C. P. A. The Ronald Press Co., New York. 441 pp. Price \$4.00 net.

Municipal "accounting" as it is practiced in a great many cities in this country has become notorious for its non-existence. Budget time to many city officials casts its worrying shadows many months ahead because at this time all the inefficiencies, wastes, inaccuracies and perhaps dishonesties will be shown up by the minority administration. It is at reckoning time that so many officials fail. This is due in most cases primarily to poor, careless, unsystematic accounting and haphazard budget making. At a period when the campaign slogan of every candidate has become "Economy and Efficiency" it is very surprising that so few officials and municipalities have attempted to put into practice even the most elementary of principles of economy and efficiency. As Mr. Eggleston points out "only thirteen years ago there was no city in this country whose financial records and public accounts had been so systematized as to furnish the information needed for administrative judgment and proper control."

Since then progress has been rapid and hundreds of cities have adopted, voluntarily or by state edict, some sort of uniform system of accounting and classification so that the Census Bureau has begun to be able to make comparisons between the financial con-

ditions of the cities. Various organizations, individuals and schools have been at work in this field with the result that an adequate system may be installed by any city that desires one. Mr. Eggleston has studied these systems and, drawing to a great extent on experience gained in the Department of Finance of the City of New York, he presents in fullest possible detail the transactions, ordinary and special, of a municipality. This has been done for the methods of the larger cities, but a special chapter has been added giving an equally detailed exposition of the accounting of a smaller city.

The various chapters take up first the general principles of keeping a city's books and putting municipal accounts on an intelligent basis; it considers budget-making, funds and bonds, and then goes into minute detail of every phase of purchase records, vouchers, pay-rolls, stores control, expense analysis, costs, accounts receivable and collections. All the books, checks, balance sheets, statements, entries and forms are explained very clearly and illustrated with excellent examples.

Mr. Eggleston presents here probably as complete a volume, which is at the same time lucid and interesting, as can be written at the present time. The work is detailed, accurate and authoritative, but it may be understood by non-technical readers. Any city official or accountant who is desirous of installing real system into the financial affairs of his city—and there are still a few who are or who should be—ought to find this volume not only an inspiration but also an invaluable practical aid for the task.

PLAY IN EDUCATION. By Joseph Lee. The Macmillan Co., New York. 494 pp. Price, \$1.50 net.

"Playgrounds for the Children" is becoming a splendid subject for political oratory and the wise candidate for city office finds the appeal for the little ones a profitable one. Yet the number of playgrounds that have materialized are still very few—and there is always a tendency, in the strenuous times of budget-pruning, to cut down on the playgrounds. The proposition of playgrounds seems a simple one—in reality it is probably several times as difficult as understanding one's child. The problem is important—a playground is the child's best classroom. As Mr. Lee says, "The boy without a playground is the man without a job."

Mr. Lee tells us the why of play and explains the kinds of games that are needed at various ages. He deals with the instincts of the child and the way they must be satisfied by expression in play. He makes clear how play is education. The volume is written in a rather "literary" style but vivid and interesting, and the city official who concerns himself with the welfare of the children should find much in Mr. Lee's book as to "what this playground movement is all about, anyway."

NEW APPLIANCES

Describing New Machinery, Apparatus, Materials and Methods and Recent Interesting Installations.

TESTING APPARATUS.

For Various Tests of Road Materials. PENETROMETER.

The increasing following of standard specifications for road construction and paving and the materials used has naturally led to the testing laboratory becoming a necessary adjunct to the engineer's office and to the development of apparatus for making required tests under standard conditions. The penetrometer, for measuring the consistency of asphalt cement or similar material as determined by the depth to which, under a definite load and during a given time, a standard needle will penetrate, is one of the most important of these.

The New York Testing Laboratory penetrometer measures this depth to tenths of a millimeter and the time by a stop clockwork attachment fixed to the standard of the apparatus. A No. 2 R. J. Roberts needle is used as standard, five seconds is standard time for penetration, 77 degrees F. or 25 degrees C. is standard temperature and 100 grams (including needle weight) is standard weight. The sample is first prepared for standard conditions and placed on the revolving table E of the penetrometer and raised, by means of a screw on platen D, until the sample just touches the point of the needle as reflected in the mirror N. The foot of rack L is rested on the rod carrying the weight and needle and the hand K set at zero on the dial J. The rod is released by pressing the plunger O for a period of five seconds as indicated by the ten beats of the stop clock H, and the rack L is again moved down

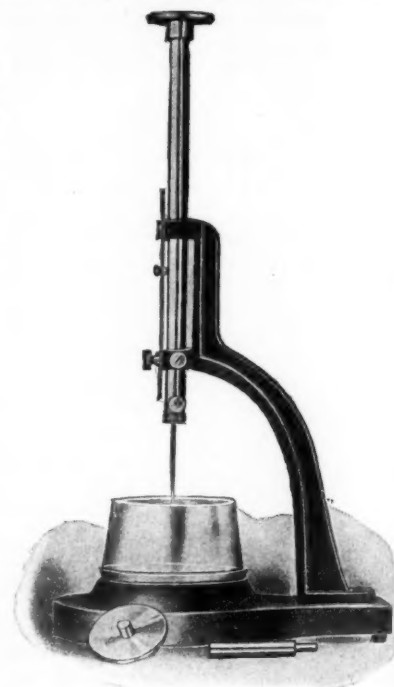
until the foot rests upon the rod and then the difference in reading on the dial will represent in degrees each equivalent to a tenth of a millimeter the depth which the needle has penetrated.

The other illustration shows the improved Vicat needle for penetration tests.

DUCTILITY MACHINE.

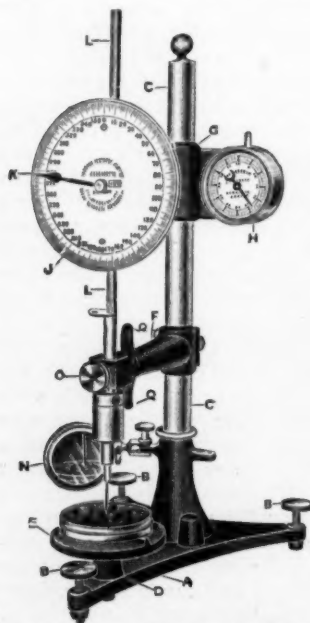
The Smith hand ductility machine is for making another important test. When a metronome is set to 79 beats per minute and the hand wheel of the machine is rotated at such a speed that the clicks produced by the clicking device on the machine synchronizes with those of the metronome, the traveling carriage of the machine will be moved forward at the standard speed used in making tests of this kind—5 cm. per minute. A briquette of the bitumen is carefully prepared by pouring the hot material into the mold shown and when it is cooled, taking off the clamp and removing the center pieces, leaving the briquette firmly attached to the two ends of the mold, which serve as clips. The briquette is then immersed in water maintained at 77 degrees F. for at least 30 minutes or until the whole mass of bitumen is at that temperature. It is then placed in the machine, the box filled with water at the right temperature, the pointer is set at zero and a thermometer placed through a cork in the carriage to measure the variations in the temperature which may take place during the test. The distance registered by the pointer at the moment the thread of bitumen breaks gives the ductility expressed in cm. of the sample. During the pull-

ing operation the temperature of the water in the box should not vary more than one-half degree from the standard temperature. When testing asphalts, asphalt cements or Litumen in this way it is customary to bring them

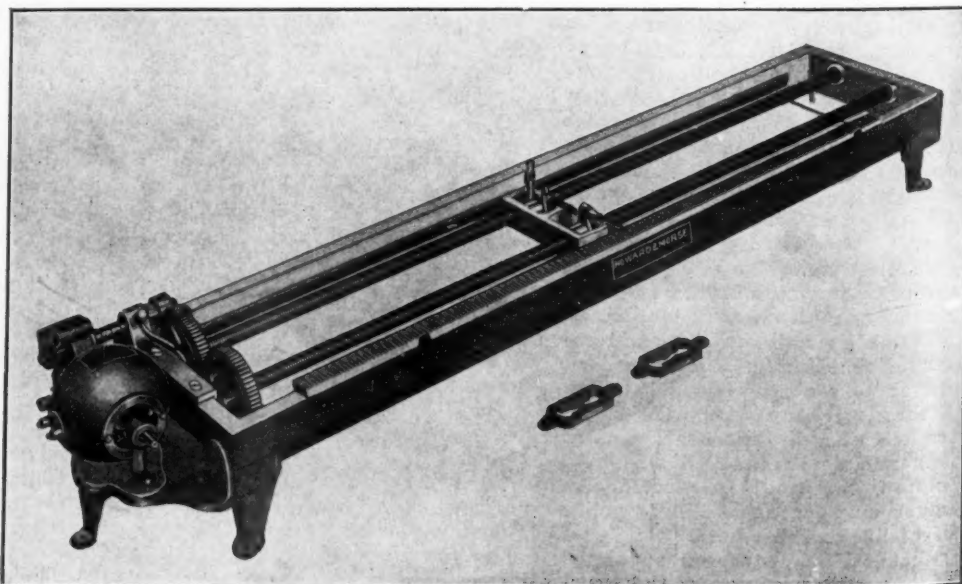


IMPROVED VICAT NEEDLE.

to a consistency of 50 penetrations at 77 degrees F (New York Testing Laboratory Penetrometer) in order that results obtained may be comparative. This is done by softening them with a



STANDARD PENETROMETER.



SMITH DUCTILITY MACHINE DIRECT-CONNECTED WITH D. C. MOTOR.

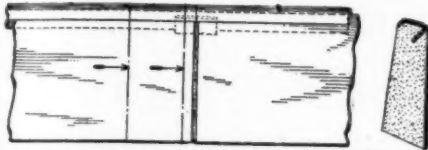
flux similar to that which it is proposed to use in practice.

The apparatus described and illustrated is all made by Howard & Morse, 1197-1211 De Kalb Ave., Brooklyn, N. Y.

DIVIDING PLATE

Of Perishable Material for Expansion Joints in Concrete.

Dividing plates commonly used for expansion joints in concrete curbing, sidewalks, roads and similar construction, are usually of steel, wood or iron of proper shape and thickness which



PERISHABLE DIVIDING PLATE.

are removed after the concrete is sufficiently hard and the resulting space filled in. These dividing plates have disadvantages. If the plate is left in position until the concrete has finally set it may bond together and the removal is then dangerous and troublesome. Premature removal destroys the edges which can not be firmly replaced after the forms are stripped. The whole process, when the ordinary plate is used is not continuous as the forming and filling of the joints must be done after the concrete has become sufficiently hard or set.

The disadvantages are claimed to be overcome in a "perishable" dividing plate recently patented by F. W. Stocker, of F. William Stocker, Inc., 1133 Broadway, New York, and 1031 Clinton St., Hoboken, N. J. The perishable plate is made to deteriorate under atmospheric influences so that it crumbles up and leaves the necessary space between sections to be

filled gradually by dirt or dust settling in it. The perishable plate consists of an organic substance like sawdust, wood meal and the like, a mineral substance like common sand and a glutinous binding material like water soluble glue, gum tragacanth or similar material. The proportions for mixing this material would vary with the atmospheric conditions prevailing in the region of the job. The sawdust or wood meal, for instance, is mixed with some fine sand and some powdered glue and the plates are pressed into shape and size. The surfaces of each plate are treated with an oily substance to prevent bonding with the concrete. Each plate may be made of one or more layers pressed or joined together to attain sufficient strength or stiffness. Such a plate is itself elastic enough to accommodate expansion and contraction until the plate crumbles and is replaced by dirt.

WASTE RECEPTACLES.

For Street and Park; Waste Can Cart.

The "Stump" or "Bronx Park" waste basket is intended for use in parks where an ordinary can would be unsightly. As shown in the illustration,

the exterior resembles a tree stump, the rough bark appearance being obtained by dies patterned from a real stump and by material in the special paint finish. This is the pressed steel stand within which is the waste can. The can, which is easily removed for dumping, is strongly made, corrugated, and with riveted double bottom. This basket is made in two grades—three sizes in the better grade and one size at lower cost—but the inside can is the same in all. The best grade is made of special rust-resisting steel. The height of all baskets is 18 inches and the diameters vary from 26 to 30 inches, with corresponding inside cans a little smaller. This is but one type of a variety of waste cans and baskets for parks and streets, the other illustration showing two types of street corner cans.

The waste can cart, shown in the accompanying cut, is made all of steel and iron, with 30-inch wheels. The cart is designed to carry a waste can and the frame is so arranged that the cans may be easily set in or lifted out. The cart is supplied with or without cans and is made in three sizes.

The cans and carts are made by the Steel Basket Co., Cedar Rapids, Ia.

INDUSTRIAL NEWS

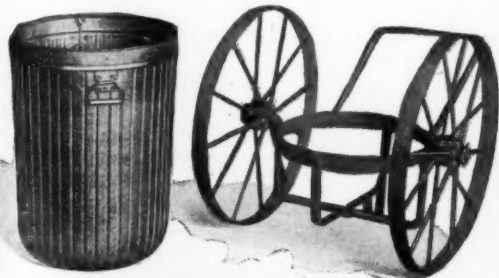
Cast Iron Pipe.—Chicago—At Cincinnati, O., the 400 tons of high-pressure pipe has been awarded to the United States Cast Iron Pipe Foundry Co., and at Joliet, Ill., quotations are being received on 600 tons of small pipe. The aggregate of small orders taken during the week shows an increase in business of this kind. Quotations: 4-inch, \$26; 6 to 12-inch, \$24; 16-inch and up, \$23.50; class A, \$1 extra. Birmingham—The manufacture of pipe is on a large scale with the active

plants. The National, at Birmingham, has orders to capacity for some time ahead. It is believed that the United States Company will be able to resume at Bessemer, where extensive improvements are being made, some time this month. Its plant at Birmingham is also ready for operation. Quotations: 4-inch, \$20.50; 6-inch and up, \$18.50. New York—Public lettings are quiet, nothing of importance having come out during the week. The United States Cast Iron Pipe Foundry Co. was the successful bidder on 615 tons of 10-inch at Ilion, N. Y., and R. D. Wood & Co. were low bidders for 1,370 tons of 4 to 10-inch for Totowa, N. J., naming \$22.75 per net ton, delivered. The tendency of prices is upward. Quotations: 6-inch, class B and heavier, \$22.50 to \$23; class A, \$23.50 to \$24 per net ton.

Lead.—Resale lots dominate lead prices. Quotations: New York, \$5.50, St. Louis, \$5.45.

Studebaker, South Bend, Ind., has just published a new dump wagon catalogue, No. 1005, for general distribution. The booklet describes the construction in detail of the 1½ and 2-yard "Ideal" dump wagons, the 2½ and 3-yard refuse wagons, the 2 and 3-yard steel axle "City Special" dump wagon, rock and gravel spreading wagon, dump box and contractors' cart. The catalog is well illustrated.

The Federal Motor Truck Co., Detroit, Mich., through M. C. Pulcher, vice-president and general manager, in a recent interview, describes the use



WASTE CAN CART.



STREET CORNER CANS.



"STUMP" WASTE BASKET IN BRONX PARK, NEW YORK.

of a Federal in closing water main gates. Where there is a break, the gates are shut at either end of the section. The gates are operated by a huge four-handled wrench which must be turned 228 times, the job taking four strong men half an hour at best. An apparatus may be attached to a Federal, however, so that when a main breaks, the truck hurries to it, straddles the gate, a wrench is attached to the universal joint and is dropped down on the gate cap—the motor is then started and the gate is closed very quickly. The Federal then hustles to the other gate so that in a few minutes the section is cut off and the repair men can correct the trouble.

NEWS OF THE SOCIETIES

(Continued from page 199)

State Conference, as most of its members are also members of the latter, is the Sanitary Officers' Association, of which Dr. M. E. Leary is President. The business meeting of the association will be held on Tuesday at 4 p. m. The general meeting of the Congress on Wednesday evening will be in charge of the Sanitary Officers' Association, with Dr. Leary presiding. Mayor Edgerton will deliver the address of welcome. William C. Redfield, Secretary of the Department of Commerce and Labor, Washington, who will represent President Wilson, will address the meeting.

The officers of the New York State Sanitary Officers' Association, in addition to President Leary, are: G. Scott Towne, M. D., of Saratoga Springs, first Vice-President; Halsey J. Ball, M. D., of Cortland, second Vice-President; Guy H. Turrell, M. D., of Smith Town Branch, third Vice-President; Thomas E. Bullard, M. D., Schuylerville, secretary; George F. Mills, M. D., of Oneida, treasurer. The Sanitary Officers' Association was organized in 1909. Its purposes are defined as "to secure needed legislation, both state and local; to improve methods of local administration, quarantine, etc.; to obtain proper recognition of the dignity of the sanitary officers, both state official and the man."

Provincial Association of Fire Chiefs.

The seventh annual convention will be held in the city of Ottawa on Aug. 24, 25, 26 and 27, 1915, and papers on the following subjects will be prepared by experts in Fire Prevention, Protection and Extinguishment: (1) Fire Prevention, Protection and Extinguishment for Basements and Cellars. (2) Proper Safeguarding of the Lives of Inmates of Public Institutions and their Protection from Fire. (3) Fire Prevention; its Enforcement and the Need of Education along Fire Prevention Lines. (4) Electric Installations and their Relation to Fire Hazards. (5) The Practical Efficiency of Motor Fire Apparatus in Winter under All Conditions.

These are now preparing papers:

Wm. Guerin, ex-deputy chief of the New York Fire Department, and who was for some years in charge of the Fire Prevention Bureau of that Department; Chief Smart of Calgary, Alberta; Chief Hammel of Quebec, Que.; Chief Graham of Ottawa, Ont.; Chief Aitkens of London, Ont.; Chief Corbett, in charge of fire departments of the Massey Harris plants, and Capt. W. Crawford, Provincial Inspector of Fire Appliances for Public Buildings, and others.

In addition to these papers, there will be a question drawer where questions relating in any way to the fire service may be placed and which will be discussed and answered from the floor of the convention.

One of the best drill schools and drill towers on the continent is in connection with the Ottawa Fire Department, and daily exhibitions of its workings will be given during the convention. In addition to the exhibits of apparatus and tools, there has recently been installed in the Ottawa Fire Department a number of pieces of motor apparatus and these will also be on exhibit to those attending the convention.

Chief E. F. Earl of Milton is president; Chief J. W. Graham of Ottawa, vice-president; Chief J. E. Keyes of Galt, treasurer; Chief James Armstrong, Kingston, secretary.

North Carolina Good Roads Association.

The annual convention of the North Carolina Good Roads Association was held at Asheville, July 14-16. Invitations were considered for holding the next meeting at Andrews, Murphy, Greenville and Wrightsville. The former officers were all re-elected. They are: President, Henry B. Varner of Lexington; secretary, Dr. Joseph Hyde Pratt of Chapel Hill; treasurer, Joseph G. Brown of Raleigh; director, D. Tucker Brown of Raleigh.

Papers presented included: "Maintenance of Highways," D. H. Winslow, highway engineer of United States Office of Public Roads; "Maintenance and Repair of Macadam Roads," W. S. Fallis, state highway engineer; "Maintaining the Road from Farm to Market," W. A. Graham, Commissioner of Agriculture; "Federal Aid to Public Roads," James J. Britt, Congressman from the Tenth District; "State Aid to Public Roads," Gallatin Roberts, member North Carolina General Assembly; "Right Drainage and Grading," Dr. J. H. Squires; "North Carolina State Highway Commission," Benahan Cameron of the State Highway Commission; "The Association and the State Highway Commission," John C. Drewry, chairman of Legislative Committee; "Working the Prisoners Without Guards," William A. McGirt, chairman Board of Commissioners, New Hanover County, R. E. Snowden, highway engineer; "Sanitary Jails and Camps," Dr. W. S. Rankin, secretary State Board of Health, and Dr. Joseph Hyde Pratt, State Geologist.

New York State Police Chiefs Association.

The sixteenth annual convention of the New York State Police Chiefs Association was held at Watertown, N. Y., July 27-28. It was originally planned to extend the convention another day, but as many who were to read papers were not prepared, the convention was cut short a day. The following officers were elected: Chief of Police Edward J. Singleton of Watertown, president; Chief John T. Mannion of Herkimer, vice president, and Chief J. Z. Hyatt of Albany, secretary and treasurer. Kingston was selected as the place for the next meeting. President Regan read his annual message as head of the organization and then brought up the matter of automobile regulation. He urged a greater co-operation in the enforcement of the laws and particularly those applying to lights and signal devices on cars. In the discussion much stress was laid on the fact that the tail lights employed on most automobiles do not fulfill properly the purpose for which they are intended. It was pointed out by the officials that rarely do the lights enable an officer to detect the number on the license plate. The discussion on this was held open and it is expected definite action will be taken at one of the later sessions. In this connection Mr. Regan presented a paper from the Safety First Society of New York.

Two papers were read. One was presented by Chief Singleton of Watertown, and the other by Chief James J. Long of Little Falls. Chief Long spoke on the tramp problem, saying that in less than a year lodging to 1,402 tramps was given in the city of Little Falls. He said that the number of tramps in the state was increasing rather than decreasing and said that the great foreign immigration was partially responsible for this increase. Chief Long advocated as a solution of the problem the establishment of a state farm for tramps.

Chief Singleton spoke on the reformation of the criminal. He said that a large number of the inmates of the various penitentiaries of the state were on short sentences for minor offenses. The association with the older and more hardened convicts had a demoralizing effect on these younger prisoners. Therefore, according to the chief, there should be associated with every penitentiary and county jail a prison farm. He also favored the establishment of a hospital in connection with penal institutions for the curing of the habitual drunkard. Chief Singleton said that he believed that these institutions could be made self sustaining.

A resolution was passed expressing the support of the association to the amendment proposed to the state constitution, provided that the railroads of the state be permitted to grant free transportation to police officers. It was brought out at the meeting that the railroads were willing to do this but were prevented under the existing law.

ADVANCE CONTRACT NEWS

ADVANCED INFORMATION BIDS ASKED FOR

CONTRACTS AWARDED ITEMIZED PRICES

To be of value this matter must be printed in the number immediately following its receipt, which makes it impossible for us to verify it all. Our sources of information are believed to be reliable, but we cannot guarantee the correctness of all items. Parties in charge of proposed work are requested to send us information concerning it as early as possible; also correction of any errors discovered.

BIDS ASKED FOR

STATE	CITY	REC'D UNTIL	NATURE OF WORK	ADDRESS INQUIRIES TO
STREET AND ROADS				
Wis.	Burlington	2 p.m., Aug.	7.. Constructing 15,500 yds. of macadam, 8,094 yds. of concrete paving and 2,500 ft. of curb and gutters.	P. J. Hurtgen, City Engr.
Wis.	Racine	10 a.m., Aug.	7.. 6,226 yds. brick paving, 2,660 ft. concrete combined curb and gutter and 3,250 yds. excavation	P. H. Connolly, City Engr.
Mont.	Butte	Aug.	7.. 6,000 yds. bitulithic, asphaltic or wood block paving.	J. J. Armstrong, City Engr.
Minn.	Tower	8 p.m., Aug.	7.. 16,600 sq. feet cement sidewalks, curbs and gutters.	Chas. Lang, City Rec.
Ill.	Dixon	Aug.	7.. Reflooring bridges, cost \$7,900.	L. B. Neighbour, Hwy. Supt.
O.	Up. Sandusky	11.30 a.m., Aug.	7.. Grading and stoning road.	J. Marguerat, Co. Aud.
O.	Cadiz	2 p.m., Aug.	9.. Paving with brick 8,512 yds.	J. A. Gordon, City Engr.
Ind.	Vincennes	Aug.	9.. Paving 4 blks. with brick, conc., bitu. or asphalt.	H. T. Watts, City Engr.
Okla.	Tulsa	5 p.m., Aug.	9.. Paving several streets.	E. B. Cline, City Aud.
Ill.	Peoria	2 p.m., Aug.	9.. Constructing cement sidewalks on several streets.	S. W. Eckley, Pres. B. L. I.
Pa.	Wesleyville	7 p.m., Aug.	9.. Grading, curbing and paving road.	W. H. McMannus, Clk. Council
Ind.	Peru	Aug.	9.. Constructing gravel roads.	F. K. McElheny, Co. Aud.
Ind.	Brownstone	Aug.	9.. Paving streets with brick, asphalt, concrete or bituminous macadam	City Clerk.
S. D.	Watertown	Aug.	9.. Paving with cement	O. M. Lane, Co. Aud.
Ind.	Indianapolis	Aug.	9.. Constructing 62,000 sq. yds. concrete pavement.	W. T. Patten, Co. Aud.
Ill.	Peoria	2 p.m., Aug.	9.. Constructing concrete sidewalk	S. W. Eckley, Pres. B. L. Imp.
O.	Grand View Heights	Noon, Aug.	9.. Paving with water bound macadam	T. G. Constable, Clerk.
Mass.	Boston	Noon, Aug.	9.. Const. bitu. mac. roadway; artificial stone sidewalk.	Ed. F. Murphy, Comr. P. W.
Pa.	Allentown	5 p.m., Aug.	9.. Constructing conc. or Amesite road 2,300 ft. long.	Bascon & Slegler, Twp. Engrs.
O.	Cincinnati	Noon, Aug.	9.. Grad., const. conc. curbs & gut. & pav. with bitu. mac.	Phillip Foadick, Dir. Pub. Ser.
Minn.	St. Paul	10.30 a.m., Aug.	9.. Grading and improving streets.	Aug. Hohenstein, Fur. Agt.
Wash.	No. Yakima	2 p.m., Aug.	9.. Constructing one mile of road.	County Commissioners
Ind.	Vincennes	Aug.	9.. Street paving	Bd. Pub. Wks.
Ala.	Marion	Aug.	9.. Draining and gravelling 8 miles of road	W. L. Pitts, Probate Judge.
Ind.	Peru	Noon, Aug.	9.. Grading, paving and improving roads.	F. K. McElheny, Co. Aud.
O.	Cincinnati	Noon, Aug.	9.. Grading and sodding—2 jobs.	Clk. Bd. Education
Wash.	Everett	Aug.	9.. Highway improvements	Hans Mumm, Jr., Co. Engr.
Wash.	Olympia	2 p.m., Aug.	9.. Five miles of road to cost \$17,000.	Highway Com.
Ind.	Indianapolis	10 a.m., Aug.	9.. Construction 3 roads.	W. T. Patten, Marion Co. Aud.
Wash.	Seattle	Aug.	9.. Constructing roads, cost \$554,000.	Byron Phelps, Co. Clk.
Wash.	Olympia	Aug.	9.. Clearing, grading and draining 14 miles roads.	W. R. Roy, State Hwy. Comr.
N. J.	Keyport	Aug.	9.. 7,620 yds. reinforced concrete pavement.	A. R. Van Buskirk, Clk.
O.	Bryan	Aug.	9.. Constructing 3.98 miles of road; cost, \$37,000.	O. E. Lowe, Co. Aud.
Ind.	Brownstown	Aug.	9.. Constructing 17 blocks pavement.	City Clerk.
Del.	Wilmington	4 p.m., Aug.	10.. 50,000 yds. first-class pavement, gutters, etc.	L. B. Christie, Secy.
Minn.	Albert Lea	2 p.m., Aug.	10.. Road grading	O. A. Hammer, Co. Comr.
Pa.	Harrisburg	10 a.m., Aug.	10.. Reconstruction of 3 roads with brick block pavements.	State Highway Dept.
Ind.	Danville	10 a.m., Aug.	10.. Constructing 2 roads.	L. W. Borders, Hendricks Co. Aud.
D. C.	Washington	2 p.m., Aug.	10.. Laying cement sidewalks	District Commissioner.
O.	Galion	noon, Aug.	10.. 26,000 yds. brick, asphalt, asphalt block, wood block or treated macadam	A. F. Unckrich, Dir. P. S.
La.	New Orleans	Aug.	10.. Street paving	W. J. Hardee, City Engr.
Minn.	Duluth	11 a.m., Aug.	10.. Grading, paving and improving streets.	W. H. Borgen, Clerk.
Kans.	Wichita	Aug.	10.. Paving with concrete.	Bert Wells, City Engr.
O.	Logan	Aug.	10.. Paving with brick and constructing curbs.	Fred Allen, City Clk.
S. D.	Mitchell	Aug.	10.. 13,793 yds. hard surface pavement.	Thos. Eastcott, Co. Aud.
O.	Lima	Noon, Aug.	10.. Paving with vit. brick.	R. A. Shampell, Dir. P. Ser.
N. Y.	Niagara Falls	Aug.	10.. Paving streets	City Clerk.
O.	New Middletown	Noon, Aug.	10.. Constructing sidewalks	C. H. Wire, Vil. Clk.
Ind.	Danville	10 a.m., Aug.	10.. Constructing highways	County Auditor
Ill.	Chicago	11 a.m., Aug.	11.. Const. pave., adjust. manholes & catchbasins, curb, etc.	E. J. Glackin, Sec. B. L. I.
N. Y.	Brooklyn	11 a.m., Aug.	11.. Constructing granite blk. pavement.	L. H. Pounds, Pres. Boro.
O.	Hamilton	10 a.m., Aug.	11.. Constructing conc. road, box culvert and revetments.	W. W. Crawford, Co. Aud.
Ind.	Crown Point	1 p.m., Aug.	11.. Constructing gravel roads.	E. Simon, Co. Aud.
N. C.	Goldsboro	10 a.m., Aug.	11.. Brick and bituminous paving.	D. J. Broadhurst, City Clk.
N. J.	Roseland	8.30 p.m., Aug.	12.. Grading, macadamizing and improving streets.	E. Oscar DeCamp, Boro. Clk.
O.	Marble Cliff	Noon, Aug.	12.. Constructing macadam road.	C. Newhouse, City Clk.
N. J.	Newark	2.15 p.m., Aug.	12.. Constructing 4,500 yds. granite block pavement and 2,000 ft. curb	M. R. Sherrard, Chief Engr.
Ohio	East View	noon, Aug.	12.. Improving and constructing sidewalks	C. E. Burger, Clk.
O.	Cincinnati	Noon, Aug.	12.. Setting granite curb, pav. with asphalt & draining	Phillip Foadick, Dir. P. S.
Ill.	Mt. Carmel	Aug.	12.. 20 miles gravel road, cost \$60,000.	E. E. Sells, Clk.
Ind.	Jeffersonville	10 a.m., Aug.	14.. Grading, paving and improving road.	G. W. Stoner, Co. Aud.
Ill.	Woodstock	1 p.m., Aug.	14.. Constructing concrete pavements.	G. W. Frame, Sec. B. L. I.
Ind.	Goshen	1 p.m., Aug.	14.. Grading, paving & improving roads, three jobs.	J. W. Brown, Co. Aud.
Ind.	Greencastle	2 p.m., Aug.	14.. Grading, paving and improving roads, two jobs.	C. L. Althart, Co. Aud.
Wash.	Tacoma	11 a.m., Aug.	14.. Paving 5 miles with first-class pavement.	T. N. Morris, Co. Aud.
Neb.	Lincoln	Aug.	14.. Pav. with brick & asphaltic conc. to cost \$70,000.	Arthur Edgren, Co. Engr.
Ky.	Louisville	Aug.	14.. Road construction	County Commissioners
Ind.	Jeffersonville	10 a.m., Aug.	14.. Stone road	Geo. W. Stoner, Clarke Co.
O.	Bowling Green	Aug.	15.. Constructing bitu. & water bound mac. roads.	C. E. Stinebaugh, Co. Aud.
O.	Cleveland Heights	Noon, Aug.	16.. Grading and constructing sidewalks.	H. H. Canfield, Vil. Clk.
Ind.	South Bend	11 a.m., Aug.	16.. Grading, draining and paving with concrete.	Clarence Sedgwick, Co. Aud.
La.	New Orleans	noon, Aug.	16.. Constructing 26 miles highway.	F. M. Kerr, Chief State Engr.
Mo.	Poplar Bluff	7.30 p.m., Aug.	16.. 6,500 yards concrete pavement.	E. C. Thomes, City Engr.

BIDS ASKED FOR

STATE	CITY	REC'D UNTIL	NATURE OF WORK	ADDRESS INQUIRIES TO
Wash., Seattle	.....10 a.m., Aug.	16..	Road construction	County Commissioners
O., Bowling Green	.....2 p.m., Aug.	16..	Grading, draining and macadamizing road	L. H. Wismar, Co. Surv.
O., Bowling Green	.....1 p.m., Aug.	16..	Grading, draining and macadamizing road	C. E. Stinebaugh, Co. Aud.
Del., Wilmington	.....Aug.	16..	Grading, guttering and laying first class pavements	L. D. Christy, Secy.
Ind., South Bend	.....10 a.m., Aug.	17..	Constructing cement walks and curbs	Veronica Sweeney, Clk.
O., Sandusky	.....1.30 p.m., Aug.	17..	Macadamizing road	H. M. Adams, Clk. of Board
N. J., Elizabeth	.....3 p.m., Aug.	17..	Regrading and improving 4,247 ft. of street	J. L. Bauer, Co. Engr.
Wash., Waterville	.....Aug.	17..	Drain. & grav. 3.5 miles of road; cost, \$18,000	R. F. Foster, Co. Engr.
Tenn., Memphis	.....Aug.	17..	Asphaltic concrete paving, to cost \$10,000	J. W. Weatherford, City Engr.
Mich., Howell	.....1 p.m., Aug.	17..	Paving streets	L. J. Pettibone, City Clk.
O., Uhrichsville	.....Noon, Aug.	17..	One mile of brick paving	H. O. Snider, City Clk.
Minn., Buffalo	.....1 p.m., Aug.	17..	Constructing state road	John A. Berg, Co. Aud.
Ind., South Bend	.....Aug.	18..	4.6 miles of concrete road	Clarence Sedgwick, Co. Aud.
Mich., Belding	.....Aug.	18..	15,000 yds. paving	F. E. Conant, City Clk.
Neb., Lincoln	.....Aug.	18..	Paving with brick or asphalt concrete, cost \$40,000	H. E. Wells, Co. Clk.
O., Marion	.....Aug.	18..	Paving bridges with wood block	V. Perle, Garfield, Clk.
Ala., Scottsborough	.....Aug.	21..	Grading and draining 6½ miles road	W. S. Keller, State Hgwy. Com. Montgomery.
Ohio, Toledo	.....10 a.m., Aug.	23..	Improving roads	C. J. Sanzenbacher, Co. Aud.
N. J., N. Brunswick	.....2.30 p.m., Aug.	23..	Constructing brick and bituminous conc. road	A. J. Gebhardt, Dir.
O., Columbus	.....10 a.m., Aug.	23..	Improving and macadamizing roads	John Scott, Clk. of Bd.
Ala., Vernon	.....Aug.	24..	Grading and graveling road. Cost, \$4,600	W. S. Keller, State Hgwy. Engr. Montgomery.
N. Y., White Plains	.....8 p.m., Aug.	25..	Laying sidewalks and constructing curbs and gutters	W. H. Carpenter, Jr., Vil. Clk.
Wis., Racine	.....10 a.m., Aug.	28..	Constructing 110 ft. of conc. curb and gutter	City Clerk
Wis., Green Bay	.....2 p.m., Aug.	30..	Grad. and placing gravel or crushed stone on street	City Clerk
Colo., Denver	.....11 a.m., Aug.	30..	Concrete paving, cost \$15,410.68	J. B. Hunter, Pres. B. P. W.
N. Y., Lockport	.....Sept.	9..	2,000 yds. brick paving	City Clerk

SEWERAGE

Ia., Clearfield	Aug. 7.	Sanitary sewers to cost \$10,000	City Clerk
Minn., Delano	1 p.m., Aug. 7.	Ditch work, including 1,800 ft. 18-in. tile	J. A. Berg, Co. Aud.
Iowa, Fairfield	Aug. 7.	Constructing sanitary sewers	City Clerk
Minn., Duluth	11 a.m., Aug. 7.	Constructing sanitary sewers	W. H. Borgen, Clerk.
Cal., Los Angeles	10 a.m., Aug. 9.	Repairing outfall sewer pier	H. B. Ferris, Secy. Bd. Pub. W.
Minn., St. Paul	10.30 p.m., Aug. 9.	Constructing sewers in several streets	Aug. Hohenstein, Pur. Agt.
Pa., Mt. Union	Aug. 9.	4,980 ft. 8 to 15-in. sewers	D. W. Dillman, Boro. Engr.
Colo., Steamboat Springs	Aug. 9.	Sewer system to cost \$62,000	B. G. Bradley, Town Engr.
S. C., Greenville	Aug. 10.	19,000 ft. 8 in. sewer, manholes, etc.	C. P. Ballenger, Engr.
N. C., Warrenton	Aug. 10.	Constructing sewer system	G. C. White, Engr., Charlotte.
Utah, Logan	5 p.m., Aug. 10.	Constructing sewers	Roy Bullen, City Engr.
Cal., Fresno	Noon, Aug. 10.	Constructing sewer for Normal School	W. F. McClure, State Engr., Sacramento
N. Y., Albion	10 a.m., Aug. 10.	Altering and constructing sewers	W. B. Bye, Pres. Bd. Mgrs.
S. D., Watertown	8 a.m., Aug. 10.	Sewer system to cost \$105,000	O. M. Layne, City Aud.
O., Canton	Noon, Aug. 11.	Constructing sewers	W. C. Lane, Clk. Bd. Ed.
Pa., Union City	6 p.m., Aug. 11.	Constructing 2,087 ft. 12-in. sanitary sewers	T. H. Reynolds, Boro. Engr.
Ia., Oskaloosa	8 p.m., Aug. 11.	Laying 600 ft. 8-in. sewer and constructing manhole	T. H. Carlin, City Clk.
N. Y., Schenectady	2.30 p.m., Aug. 11.	Laying sanitary sewers	W. E. Weller, Actg. C. E.
N. J., Trenton	2.30 p.m., Aug. 11.	Constructing sewers	Frank Thompson, City Clk.
Pa., Philadelphia	Noon, Aug. 11.	Constructing sewers and draining streets	M. L. Cooke, Dir. P. W.
Mont., Malta	2 p.m., Aug. 12.	Constructing drainage ditch	Morris Bein, Dir.
Wis., Appleton	9 a.m., Aug. 14.	Constructing sewers	E. L. Williams, City Clk.
Ill., Anna	Aug. 16.	Constructing sewage disposal plant, cost \$8,000	W. S. Shields, Co., 8 So. Dearborn St., Chicago
N. J., Camden	8 p.m., Aug. 16.	Constructing sewers and drains	A. B. Sparks, Chr. St. & Hwys. Com.
S. D., Watertown	8 p.m., Aug. 16.	Constr. sewers & sewerage systems to cost \$105,000	F. W. Schreiber, City Engr.
Minn., Mankato	2 p.m., Aug. 16.	Constructing drainage ditch	C. L. Kennedy, Co. Aud.
Mo., Poplar Bluff	7.30 p.m., Aug. 16.	27,000 ft. 6 to 12-in. pipe, ejector & 35 manholes; cost \$17,500	E. C. Thomas, City Engr.
N. Y., L. I. City	11 a.m., Aug. 17.	Constructing sewers in several streets	M. E. Connolly, Boro. Pres.
Wis., Oak Creek	10 a.m., Aug. 19.	Drainage work, including 12,000 ft. 8 to 18-in. tile	P. J. Hurlgen, Burlington
Tex., Beeville	Aug. 20.	Extending sewer system	W. G. Gayle, City Clk.
Tex., Dallas	Aug. 23.	Constructing sewers and disposal plants	J. B. Winslett, City Sec.
Pa., Lebanon	5 p.m., Aug. 25.	Constructing sewage disposal plant complete	T. R. Crowell, City Engr.
O., Marion	Noon, Aug. 26.	Constructing sanitary and storm water sewers	W. C. Selanders, Dir.
N. J., Newark	Aug. 31.	Superstructure of Meadows pumping station	Passaic Valley Sew. Comm.
Ia., Clinton	8 p.m., Sept. 1.	Constructing vitr. and segment block sewers	City Clerk
Okl., Sand Springs	Sept. 1.	8,350 ft. 6-in. sewers, cost \$4,000	City Clerk
O., Struthers	Sept. 1.	Constructing storm and sanitary sewers and paving sts.	Jonah Richards, Vil. Clk.

WATER SUPPLY

O., St. Clairsville	Noon, Aug. 7.	Water system for school	Anna Hollingsworth, Clk. Bd. of Education
Mont., Chouteau	8 p.m., Aug. 9.	Constructing water system to cost \$42,000	A. L. Powers, Town Clk.
O., Columbus	Noon, Aug. 10.	Furnishing lead pipe	G. A. Borden, Dir. Pub. Ser.
N. Y., New York	Aug. 10.	Making 6 500-ft. borings on Catskill Aqueduct	Board Water Supply
D. C., Washington	Aug. 10.	Supplies for Navy Department	Bu. of Sup. & Accts.
N. C., Warrenton	Aug. 10.	Constructing water works system	G. C. White, Engr., Charlotte.
Ia., Denison	8 p.m., Aug. 12.	Drilling artesian well 1,800 ft. deep	D. F. Tucker, City Clk.
Pa., Philadelphia	Noon, Aug. 12.	Laying and furnishing pipe and specials	M. L. Cooke, Dir. P. W.
O., Coshocton	Noon, Aug. 12.	Constr. 3,000,000-gal. reinforced conc. covered reservoir	Elmer Smith, Dir. P. S.
Mo., St. Louis	Aug. 13.	Reconstructing reservoir to cost \$400,000	E. E. Wall, Water Comr.
Neb., Ord	Aug. 13.	Constructing water works	O. P. Conwell, City Clk.
Mont., Fromberg	Aug. 14.	Constructing water works to cost \$17,500	C. J. Jones, Town Clk.
Can., (Alberta) Drumheller	Aug. 16.	Laying water mains, sinking well and constructing pumping station	O. McKee, Secy. & Treas. Bd. of Administration, 1900 Marshall Blvd., Chicago
Ill., Springfield	2 p.m., Aug. 16.	Const. tank and pumping system at Industrial Home	H. H. Canfield, Vil. Clk.
O., Cleveland Heights	Noon, Aug. 16.	Laying 12-in. water mains	H. H. Canfield, Clk.
O., Warrensville	Noon, Aug. 16.	Constructing 12-in. c.l. water mains	Water Board.
N. Y., Watervliet	Aug. 16.	Constructing waterworks system	
Tex., Beaumont	Aug. 17.	Cast iron 30-in. pipe across river and other pipe construction	J. G. Sutton, City Secy.
D. C., Washington	10 a.m., Aug. 17.	Furn. wrought iron pipe at Mare Island Navy Yard	Bu. of Sup. & Accts.
O., Brewster	Noon, Aug. 20.	Constructing waterworks	L. S. Lash, Vil. Clk.
H. T., Pearl Harbor	10 a.m., Aug. 24.	C. l. pipe fittings, lead, wrought iron & terra cotta pipe	Navy Pay Office, Honolulu
N. Y., Wellsville	noon, Aug. 25.	Improvements to the water system	F. M. Leonard, Clk.
Ia., Ogden	8 p.m., Aug. 30.	Extending water mains	City Clerk
N. J., Newark	2 p.m., Aug. 31.	Superstruc. & appurtenances for Newark Bay pump. sta.	J. H. Quilt, Clk. Passaic Val. Sew. Com.
Ia., Riverside	Sept. 1.	Installing water works system	City Clerk
Ia., Keota	Sept. 1.	Installing water works system	City Clerk

LIGHTING AND POWER

S. D., Yankton	9 a.m., Aug. 9.	Ornamental post lighting system with 27 ornamental posts, lamps, cable, etc.	John W. Summers, City Aud.
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BIDS ASKED FOR

STATE	CITY	REC'D UNTIL	NATURE OF WORK	ADDRESS INQUIRIES TO
Mich.	Saginaw	Aug. 9.	Conduit, wiring system and lighting fixtures at Post Office	Supervising Architect, Washington.
Okl.	Boswell	Aug. 12.	Equipment for electric light plant	J. T. George, City Eng.
Neb.	Ord	Aug. 13.	Constructing electric light plant	O. P. Conwell, City Clk.
D. C.	Washington	Aug. 16.	12 electric towing locomotives	General Purchasing Officer, Panama Canal
Pa.	Pittsburgh	Aug. 21.	Air compressors, gas engines, turbines & elec. light plant	U. S. Engrs. Office
Okl.	Adams	Sept. 20.	Electric light plant	Frank Mann, Engr
Pa.	Pittsburgh	Noon, Aug. 21.	Electric light plant at Lock 6	U. S. Engineer's Office
FIRE EQUIPMENT				
O.	Youngstown	Noon, Aug. 9.	850 ft. 3 1/2-in. fire hose	N. M'Vay, Clerk
Ill.	Quincy	2.30 p.m., Aug. 10.	1,000 ft. hose	Fire Comr.
O.	Bellaire	Aug. 11.	Two automobile fire trucks and one tractor	Director of Public Safety
England	London	August 11.	Installing fire alarms at Rangoon	Ogilvy Gillanders & Co., 65 Cornhill, E. C.
Minn.	Breckenridge	Aug. 16.	Constructing fire station, city hall and jail	City Clerk
H. T.	Pearl Harbor	10 a.m., Aug. 17.	Two 2-wheel hose carts & one 2-wheel chemical engine	Bu. of Sup. & Accts., Washington, D. C.
O.	Columbus	Noon, Aug. 19.	Automobile and commercial car	B. L. Bargar, Dir. Pub. Safety
Ill.	Chicago	Sept. 1.	Constructing 9 fire stations, cost \$215,000	Fire Chief
BRIDGES				
Fla.	Clearwater	Aug. 7.	Constructing bridge two miles long	E. W. Parker, Curry Bldg., Tampa.
Conn.	Bridgeport	Noon, Aug. 7.	Const. 500 ft. reinforced conc. girder bridge	Bridge Commission
Pa.	Uniontown	Noon, Aug. 7.	Constructing two concrete wing walls for bridge	H. Kisinger, Co. Compt.
Kan.	Wichita	Aug. 8.	Reinforced concrete bridge, to cost \$8,000	H. M. Barrett, Co. Clk.
R. I.	Woonsocket	Aug. 9.	Construction of two reinforced concrete bridges	F. H. Mills, City. Engr.
Ark.	Camden	Noon, Aug. 9.	Additions and reinforcements to piers	I. A. Baum, Engr.
O.	Niles	Aug. 9.	Bridge construction	W. F. Harrington, Co. Aud.
O.	Sandusky	1.30 p.m., Aug. 9.	Erection and completion of bridge	County Surveyor
Ind.	Ft. Wayne	10 a.m., Aug. 9.	Construction of concrete culverts and bridges	W. Johnson, Allen Co. Aud.
Minn.	Kenneth	9 a.m., Aug. 9.	Concrete and steel truss bridge	O. O. Olsen, Chr. Bd.
N. D.	Minot	2 p.m., Aug. 9.	Constructing 2 bridges	L. J. Thompson, Co. Aud.
Wash.	Olympia	Aug. 9.	195 ft. steel riveted truss bridge	W. R. Roy, State Hwy. Comr.
Kan.	Wichita	Aug. 9.	35-foot span steel bridge	E. V. Moore, Co. Engr.
N. D.	Ft. Yates	2 p.m., Aug. 10.	Two 36-ft. steel bridges	A. Colville, Co. Aud.
Minn.	Albert Lea	2 p.m., Aug. 10.	4 State bridges 15 to 23 ft. span	Fred. Tavis, Co. Aud.
Cal.	Eureka	Aug. 10.	Const. suspension and reinforced concrete bridges	F. M. Kay, Clk. Co. Supv.
Conn.	Westport	Aug. 10.	12-span reinforced concrete bridge	C. J. Bennett, State Hy. Com., Hartford.
N. J.	Trenton	2.30 p.m., Aug. 10.	Constructing reinforced concrete bridge	J. J. Powers, Dir. County Comrs.
Kan.	Girard	Aug. 11.	Constructing 3 steel or concrete bridges	H. W. Gough, Co. Compt.
Pa.	Harrisburg	11 a.m., Aug. 11.	Rebuilding county bridge reinforced concrete	County Supervisors
Cal.	Placerville	Aug. 15.	162-ft. span steel truss bridge	E. M. Clark, Co. Aud.
Ind.	Lebanon	Aug. 15.	Ten steel and concrete bridges	County Clerk
Cal.	Visalia	Aug. 16.	400 concrete bridge, cost \$20,000	Max Gehlhar, Co. Clk.
Ore.	Salem	Aug. 16.	Constructing steel truss bridge	Byron Phelps, Clk. of Bd.
Wash.	Seattle	10 a.m., Aug. 16.	441-ft. frame trestle	W. B. Alexander, Co. Aud.
O.	Marietta	1 p.m., Aug. 17.	Constructing concrete bridge	Clark Co. Comrs.
Ga.	Princeton	Aug. 17.	Constructing steel bridge	Tate Right, Clerk.
Ga.	Athens	Aug. 17.	Constructing steel and concrete bridge	C. C. Everett, Clk. Co. Comrs.
Kan.	Girard	Noon, Aug. 18.	Ten steel and reinforced concrete bridges	W. A. Stinchcomb, Co. Surv.
O.	Cleveland	10 a.m., Aug. 18.	Repairs to steel deck bridge	F. H. Vogan, Co. Clk.
O.	Youngstown	10 a.m., Aug. 18.	Constructing bridge	V. Pebble Garfield, Clk. Co. Com.
O.	Marion	Noon, Aug. 18.	Reflooring bridges with wood block	John L. Means, Co. Aud.
O.	Steubenville	Noon, Aug. 20.	Constructing bridge	M. C. McCarthy, Co. Aud.
N. D.	Beach	10 a.m., Aug. 20.	Constructing bridge	T. R. Crowell, City Engr.
Pa.	Lebanon	Aug. 20.	Building 3 bridges, reinforced concrete or steel	C. R. Wiesel, City Engr.
Cal.	Kennett	Aug. 21.	Wood and steel bridge 1,500 ft. long; cost, \$20,000	H. A. Pfister, Clk. Bd. Supv.
Cal.	San Jose	11 a.m., Aug. 23.	Reinforced conc. slab culvert	W. R. Harrington, Co. Aud.
O.	Warren	1 p.m., Aug. 23.	Constructing steel bridge	John O'Connor, Clk.
Neb.	Fremont	Noon, Aug. 24.	Constructing & repairing bridges for one year	U. S. Engr.
Pa.	Pittsburgh	Noon, Aug. 26.	Furnishing bridges and trestles	Harrington, Howard & Ash, Engrs., Kansas City, Mo.
Okl.	Tulsa	Aug. 26.	1,404 ft. span bridge	C. O. Huggins, Aud.
Ohio	Mt. Gilead	11 a.m., Aug. 29.	120 ft. span bridge	R. R. Hughes, Co. Engr.
Okl.	Tulsa	Sept. 1.	Bridge over Arkansas River; cost, \$200,000	County Commissioners
Ga.	Statesboro	Sept. 6.	Bridge construction	A. P. Davis, Ch. Engr. U. S. Rec. Serv.
D. C.	Washington	2 p.m., Sept. 8.	300-ft. span steel bridge	
MISCELLANEOUS				
Wis.	Burlington	2 p.m., Aug. 7.	2,600 barrels Portland cement	E. J. Hurtgen, City Engr.
N. Y.	New York	Noon, Aug. 9.	100 hose reel carts; fittings for asphalt scrapers	J. T. Fetherston, Comr. St. Cleaning.
N. J.	Asbury Park	11 a.m., Aug. 10.	Collection and disposal of garbage and rubbish	H. D. White, City Clk.
D. C.	Washington	10 a.m., Aug. 10.	15 pumps and one condenser	Bu. of Sup. & Accounts.
Pa.	Harrisburg	Aug. 10.	Automobile license plates	State Hwy. Comr.
D. C.	Washington	Aug. 11.	Constructing Post Office at Wellsburg, W. Va.	J. A. Wetmore, Supv. Archt.
O.	Cincinnati	Noon, Aug. 12.	Furnishing touring car	Ernst Von Bagen, Pur. Agt.
N. Y.	New York	Noon, Aug. 12.	Furn. propeller wheels & caps, condenser & boiler tubes	R. A. C. Smith, Comr. Docks
Pa.	Philadelphia	Noon, Aug. 16.	Constructing 700 ft. subway	A. M. Taylor, Dir. City Transit
N. J.	Trenton	Noon, Aug. 17.	20,000 cu. yds. filling and grading	E. I. Edwards, Comptroller
Australia	Adelaide	Aug. 24.	Steel self-propelling barge loading bucket dredger	South Australian Harbor Bd.
Tex.	Galveston	5 p.m., Aug. 26.	Air compressors and surface condenser	J. G. Kelly, City Secy.

STREETS AND ROADS

Hollister, Cal.—Bonds in sum of \$6,000 have been voted for paving of main street of San Juan from north to south to connect with ends of state highway.

Monterey, Cal.—Contracts will be let shortly for the grading, macadamizing and curbing of Larkin St. between the southerly line of Madison St. and the northerly end of the bridge leading to Monterey County high school grounds.

Sacramento, Cal.—Bids will be called by the State Highway Commission next month for construction of two new units of highway, one between Greenfield and Camphora, in Monterey County, 11.7 miles; the other in Santa Barbara County, between Gaviota Pass and Zaca station, 11.47 miles.

Sacramento, Cal.—State Highway Commission has ordered survey of proposed highway route down Klabath River in Siskiyou and Humboldt Counties. Route would extend through great scenic

country from Hornbrook to a connection with present road system of Humboldt County.

Ventura, Cal.—Board of Supervisors has adopted report of County Good Roads Commission and called election upon road bonds for August 24. Report provides for 108 miles of main trunk lines reaching practically every county center, mileage being about equally divided between east and west side of Santa Clara River. Call is for \$1,000,000 bonds. Roads planned comprise most compre-

hensive system that is to reach the Los Angeles County line at Chatsworth and Newhall, and with the state road outlet to the south at Calabasas, it will give county three main lines into Los Angeles County. Report calls for oiled macadam roads or better and it is thought that it will be possible to make most of roads of concrete and as good as state highway, depending on market price of cement. Vote of Supervisors on call was unanimous.

Wilmington, Del.—General T. Coleman duPont has completed the specifications for the stretch of the duPont Blvd., to be constructed from Georgetown to Selbyville, and it is expected that bids soon will be asked for from contractors. All machinery, materials, etc., shall be furnished by the contractors, the specifications will require.

Jacksonville, Fla.—There will be public hearing on evening of Aug. 9 before public works committee upon question of opening up Forsyth St. through to Talleyrand Ave., and closing of certain streets east of the avenue.

Kissimmee, Fla.—To vote on a bond issue of \$70,000 for public improvements of Kissimmee, an election will be held on August 7. This issue of bonds will be for the paving of six streets, in whole or part, the retiring of \$15,000 present indebtedness and \$10,000 for the building of bridge and road. Resolution calling for a vote of \$60,000 worth of improvements was passed by a meeting of the City Council on July 22. On July 22 the same body met again and put an additional vote for \$10,000 for the St. Cloud road improvement in the resolution.

Manatee, Fla.—The County Commissioners have called an election to be held on the 17th of August, authorizing a bond issue of \$161,680 for the construction of 21 miles of sand-oiled roads and the grading of 55 miles of roads to connect with other hard-surfaced and graded roads, and the building of bridges.

Palatka, Fla.—The numerous signed petition to County Commissioners for a new sub-road district for Palatka and vicinity and calling for election for \$208,000 has been accepted and request granted. First road under consideration is that leading from eastern end of the county bridge across St. Johns River at East Palatka, through to the St. Johns County line near Hastings, a distance of about nine miles. It is proposed to construct this road 15 ft. wide from the bridge for distance of two miles through East Palatka, toward Orange Mills. Balance of road is to be 9 ft.

Tarpon Springs, Fla.—Election has been called for August 18 for a bond issue of \$715,000 for system of good road in Pinellas County.

Webster, Fla.—An election to decide on a proposed bond issue of \$250,000 for good roads expenditures will be held in the near future.

Edwardsville, Ill.—Council has passed ordinance providing for paving of Buchanan St. from end of present pavement to L. & M. railroad tracks. Bids will be asked for in a short time.

Peoria, Ill.—Bids will be received until 2 p.m., August 2, for following improvements: 400 cu. yds. excavation, 700 lin. ft. stone curb, reset 36 lin. ft. stone protection curb, 90 lin. ft. new stone curb, 1,275 sq. yds. concrete foundation, 1,275 sq. yds. sand cushion, 1,275 sq. yds. brick pavement and 1,275 sq. yds. sand filler.

Brazil, Ind.—County Commissioners of Putnam county are considering purchase of steam roller for road work.

Indianapolis, Ind.—Board of Public Works will have public hearing August 2, on resolution adopted July 14 for resurfacing North Meridian St., from Sixteenth St. to Twenty-fifth St.

Indianapolis, Ind.—Board has rejected all bids for paving Kenwood Ave. from 30th to 38th Sts.

Marion, Ind.—Four series of road improvement bonds were sold by treasurer of Grant County, as follows: Ancil Winslow road, Fairmount Township, \$22,000, to J. F. Wild & Co., Indianapolis, at par, accrued interest and \$30 premium; the John Heavilin road, Fairmount Township, \$8,700, to the Merchants National Bank of Muncie, at par, accrued interest and \$11.10 premium; the T. J. Detamore road, Marion, \$4,800, to the Merchants National Bank, of Muncie, at par, accrued interest and \$6.10 premium; the Wilbur Plummer road, \$11,600, Marion, to the Merchants National Bank, of Muncie, at par, accrued interest and \$14.60 premium.

Richmond, Ind.—City Engr. Charles has begun preliminary work in drafting plans and specifications for the proposed widening and paving of North Third St., improvements which the board of public works hope to provide for next year.

Rochester, Ind.—The First National Bank has bought bonds for John S. Wagoner Rd. for \$4,320. There were no other bidders.

Pittsburg, Kan.—Ordinance has been adopted to provide for the curbing and guttering, grading and paving of Walnut St. from the south line of Third St. to the north line of Kansas Ave., known as Curbing District No. 78-C, and Paving District No. 98-P.

Lexington, Ky.—Campaign for repairing roads in Fayette County has been started.

Louisville, Ky.—Plans presented by Samuel T. Mann, city engineer in New Albany, to Board of Public Works for sidewalk improvement of north side of Market St. from Silver to the first alley west of Silver, have been approved.

Louisville, Ky.—City has decided to defer work on extension of 34th St.

Holyoke, Mass.—Bids for 1,500 sq. yds. wood paving blocks have been received from the United States Wood Preserving Co. at \$30.57, the American Creosoting Co. at \$29.44, and the Compressed Wood Preserving Co. at \$28.52.

Manchester, Mass.—At a special town meeting July 26 \$6,000 was appropriated for special highway construction on Summer St.

Peabody, Mass.—The Commission of Public Works has voted to authorize engineer to lay asphalt macadam roadbed in Main St. from Savings Bank crossing to point about opposite the Peabody theater.

Southfield, Mass.—State has appropriated \$10,000 to be spent on road extending from Connecticut State line to Southfield, which would make continuous State road from Canaan, to New Marlboro and Great Barrington. This money will be spent not only for improving one section of road, but also for whole exterior of line. It will be used for straightening sharp curves, widening road, and for some grading and graveling.

Kalamazoo, Mich.—A campaign to secure 200 members to Michigan Good Roads Association in Kalamazoo for purpose of boosting for Dixie highway through this district, will be launched and continued until specified number of members are signed.

St. Joseph, Mich.—Resolution has been passed determining paving of alley between Main and Court Sts. from Elm to Market Sts., and city engineer was instructed to prepare plans estimating cost of work.

Duluth, Minn.—Close to half a million dollars will be expended by city to keep Duluth's streets in condition, and to improve many highways.

Duluth, Minn.—In order to improve Duluth's famous boulevard drive, city commissioners are considering plan to extend Kent road to Nineteenth Ave east and complete connection at eastern end of the drive.

Duluth, Minn.—Plan is being considered to have works division go ahead with the \$150,000 paving job on Grand Ave. and Third St., extending west from Vernon St. to 54th Ave.

Duluth, Minn.—Bids on paving were opened July 26 and contracts will be awarded at next Council meeting. Following are bids: D. H. Clough & Co., with a bid of \$9,628.34, were low for gravel surface; Ed. Johnson & Co. were low with \$11,387.39 for a rocmac surface and J. Johnson was low on his bid of \$9,750.45 for a class C macadam surface. On the Devonshire St. job five different grades were specified by the contractors. Fredericks & Berg were low on rocmac and class "C" macadam surface estimates; D. H. Clough & Co. were low on bitulithic and class "B" asphalt estimates and Olson & Johnson were low on one course concrete estimates. The bids ran from \$6,026.87 for the concrete to \$9,875.25 for the asphalt.

St. Paul, Minn.—By adding to road improvement program of County Engineer Armstrong, Board of County Commissioners increased road and bridge fund for coming year to \$155,000, largest budget estimate for this purpose in history of Ramsey County. Of this sum county will get \$35,000 from the State. The remainder, \$120,000, will be raised by assessment. Of \$20,000 which is to be spent outside of Ramsey County,

\$9,000 will be used to grade, clay and gravel the boulevard around the north end of Bald Eagle Lake; \$5,000 will be spent on the St. Paul-Duluth highway; \$3,500 on the Mendota road in Dakota County, and \$1,000 will be paid to the town of Grant in accordance with an agreement made by the board last year. This leaves \$1,500 for other work not yet scheduled.

St. Paul, Minn.—State highway aggregating 50 miles in length have been ordered improved at a cost of \$131,500 by the State Highway Commission. In Nicollet County \$30,500 will be spent in graveling 12 miles of road. In Yellow Medicine County, \$49,000 will be spent in the improvement of an extension 18 miles. In Aitkin County 18 miles of road will be partially graveled at a cost of \$51,000.

Meridian, Miss.—Three paving propositions were ordered by Village Council and three other propositions were postponed for further consideration.

Maryville, Mo.—Resolutions and grade ordinances for paving forty blocks on thirteen streets of Maryville were corrected and adopted at special meeting of city council. They provide for all paving that is proposed for this year here.

Maryville, Mo.—Resolutions and grade ordinances prepared for consideration provide for following paving: Thompson, Walnut to Main, 4 blocks. Fifth, Market to Dunn, 7 blocks. Dunn, Fifth to Normal Ave., 1/2 block. Ninth, Mulberry to Normal grounds, 4 blocks. Third, Frederick to Grand, 4 blocks. Grand, Third to Fourth, 1 block. Fourth, Grand to Munn Ave., 3 blocks. Jenkins, Market to Main, 1 block. Edwards, Market to Main, 1 block. Market, Third to Edwards, 6 blocks, or Market, Third to alley north of First, 1 1/2 blocks. Mulberry, Ninth to Twelfth, 3 blocks. Twelfth, Mulberry to Prather Ave., 1/2 block. Prather, Twelfth to west city limits, 4 blocks.

Poplar Bluff, Mo.—Bids will be received up to 7:30 p.m., August 16, by City Council for 6,500 sq. yds. concrete pavement with Dolarway wearing surface. Edward C. Thomas is city engineer.

St. Joseph, Mo.—A hard road from here to Wathena, a project which has been agitated periodically for fifty years, is again being considered, this time concrete being material suggested and cost being estimated at \$45,000.

St. Joseph, Mo.—Ordinance has been adopted to provide for improving Ashland Ave. from prolongation of south line of Lover's Lane to point 269 ft. north of the north line of Osage St., by preparing present macadam roadway, reconstructing the present macadam roadway (where necessary), preparing the sub-base and constructing new macadam base (where necessary), constructing asphaltic concrete wearing surface, constructing concrete gutter, constructing concrete sidewalks (where necessary), constructing concrete combination curb and gutter (where necessary), and constructing concrete cross gutters where necessary.

St. Joseph, Mo.—Ordinances have been passed for paving of various streets.

St. Joseph, Mo.—Following bond issues are proposed: Streets and alleys, \$125,000; sewers, \$600,000; fire department equipment, \$86,000; Brookdale reservoir, \$50,000; electric light plant, \$75,000; workhouse, \$25,000; city hospital, \$25,000; street flushers, \$10,000; garbage collection equipment, \$15,000; asphalt plant, \$12,000; city hall repairs, \$3,000; parks, \$75,000; total, \$1,101,000.

Livingston, Mont.—Park County Commissioners have authorized considerable work on county road, leading from Will-sall, hub of Shields River valley, to Meagher county line. It is expected that this highway will in near future be connecting link in proposed park to park highway. Commissioners of Meagher county are said here to be alive to importance of securing such a highway and are planning to extend road to White Sulphur Springs, thence up Smith valley toward Great Falls.

Beatrice, Neb.—Nearly a mile of new paving is to be constructed in this city this year, the City Commissioners deciding to advertise for bids for the paving of South Sixth St. from the Rock Island railroad tracks to the street leading to the Chautauqua Park and from that street on Ninth to the Lutheran hospital.

Grand Island, Neb.—Ordinance has been passed creating paving district within corporate limits of city of Grand

Island, Hall County, Neb., to be known and designated as paving district No. 15.

Hastings, Neb.—About \$300,000 will be expended in paving construction.

Bridgeton, N. J.—City Council has passed resolution to pave and improve several streets.

Elizabeth, N. J.—Resolution has been passed ordering paving of Brunswick Ave. with trap blocks.

Newark, N. J.—Warrenite will be laid on Stewart Ave. from Schuyler Ave. to Argyle Place, by Van Keuren & Son of East Newark, whose bid of \$17,183 was accepted by Kearny Town Council. Other bids were received from Glenfield Construction Co. of this city, who offered to do work for \$17,354; the Olof Johnson Co. of Arlington, \$18,275, and the Standard Bitulithic Co., who asked \$18,116.

Paterson, N. J.—Madison Ave., from Clay St. to Tenth Ave., is to be permanently improved at last. The Freeholders have instructed Engineer Ferguson to prepare plans and specifications for this work.

Paterson, N. J.—Committee has decided to recommend that contract for repairing Passaic Ave., from Brooks Ave. to the Essex County line, be awarded to Union Construction Co., and contract for improving North Eighth St. and Planten Ave. be awarded to George Brooks, lowest bidder for that work. These contracts will be awarded at the next meeting of board.

Roselle Park, N. J.—Bids will be received at 3.30 p. m. for paving Chestnut Place, between Westfield Ave. and Clay Ave., west, with a concrete pavement with bituminous surface, together with 4-in. curb. Estimated quantities are as follows: 3,250 sq. yds. pavement, 1,260 lin. ft. 4-in. curb, 36 lin. ft. curved corners, 70 lin. ft. headers, 525 cu. yds. earth excavation, 10 cu. yds. extra concrete. W. H. Luster is Boro. Engr.

Trenton, N. J.—Ordinance has been passed providing for paving of Ellsworth Ave. and Pearl St.

Albany, N. Y.—State Department of Highways will advertise shortly for construction of four highways in Niagara County. The roads will be among next to be contracted for and will include Market St., Ransomville, Pendleton and Wilson roads. Estimated aggregate cost for construction of these proposed highways will be about \$275,000, said Senator Thompson.

Albany, N. Y.—Commissioner Edwin Duffey of State Highway Department will be able to construct proposed picturesque state highway across face of Storm King Mountain under modified plans prepared by his department. The department engineers' estimate for the construction of this 4 3-10 miles stretch was \$327,000, and 10 of the 15 proposals to do work received July 26 from contractors came within this estimate. John L. Hayes Construction Co., of Yonkers, was the lowest bidder at \$273,736, while H. S. Kervauigh, Inc., of New York City, was the highest, at \$395,176. This stretch of road is known as the Cornwall-West Point, parts 1 and 2. Part 3 of the same road consists of 1.17 miles, for which five bids were submitted. The lowest was from Nordone & Petrillo, of Mount Vernon, at \$13,342.

Albany, N. Y.—The Highway Department advises that advertisement for bids on paving of Market St. and Lake Ave. will be called for within ten days. Bids will be opened three weeks later and contracts let at once. Work will be done this year.

Auburn, N. Y.—Plans and specifications for Auburn-Weedsport state road were accepted July 27 by Cuyuga County Board of Supervisors. Plans call for an expenditure of \$166,800, of which the state pays \$91,975, or 55 per cent. The county's share is \$49,525. In addition, the city of Auburn must pay \$8,400 for extra work outside of the 16-ft. pavement built by the state. The village of Weedsport will have a bill of \$15,600 for similar work.

Boonville, N. Y.—Bids for paving of Schuyler St. from village square to depot were opened by Village Board July 22. The following was the list of bidders and the amount of their bid: Rock & Griffin, Massena, \$10,581.40; Hugh Heverling, New Berlin, \$10,710.40; William H. Ring Construction Co., Ogdensburg, \$10,818.10; James Martin, Utica, \$10,885.50; William Cogley, Utica, \$11,373.50; J. J. Fitzpatrick & Sons, Plattsburgh, \$11,412; Nelson & Co., Herkimer, \$11,519.40. Board is taking a few days to consider bids, but it is probable that contract will be let very shortly and work commenced.

Dunkirk, N. Y.—Paving and improving of several streets have been planned.

Elmsford, N. Y.—County has appropriated \$48,000 toward construction of road. Asphalt block to be used on hills.

Hudson, N. Y.—City officials have received notification from State Highway Commission to effect that bids for Hudson city state road will be asked for at next call for bids. This will probably be during latter part of August, it is understood.

Lockport, N. Y.—Ordinance for paving of Vine St. with brick block was approved after public hearing, at which no one opposed improvement.

Lockport, N. Y.—Bids were received July 30 by Clerk Fred H. Krull of the Board of Supervisors for the construction of the Shawnee road, extending from West Ave. in Lockport, a distance of 1.91 miles to connect with the improved roads leading into Niagara Falls and North Tonawanda. The proposals were: C. N. Stainthorpe & Co., Lockport, \$20,830.40; J. R. Gould, Lockport, \$21,008.38; C. B. Whitmore Co., Lockport, \$22,835.52. The lowest bid received will be recommended for acceptance at a meeting of the Supervisors to be held soon. It is below the estimate of County Superintendent of Highways Thomas M. Brennen, whose figures were \$21,236.52.

Rochester, N. Y.—See "Miscellaneous."

Silver Creek, N. Y.—At special meeting proposition of paving Dunkirk St. from west line of the town to Main St. and for paving Park Place was carried by large majority.

Falkland, N. C.—Election will be held Sept. 21st for voting on question of issuing \$50,000 worth of road bonds for improving public roads.

Columbus, O.—Hearing will be held Aug. 7 on construction of several roads in Franklin County.

Groveport, O.—Bids will be received by Council of village of Groveport, O., until 12 o'clock noon, standard time, Wednesday, Aug. 11, 1915, for furnishing necessary labor and materials for improvement of College St. from Hocking Valley spur track to north corporation line by grading and paving roadway thereof with second-class brick, setting 5-in. curbs, and constructing necessary sub-drains and catch basins, according to the plans and specifications on file in clerk's office.

Lima, O.—Pearl St., from Main to Liberty St., will be paved with brick this year. Contract will be let in two weeks.

Lima, O.—Ordinance has been passed for improvement of Main St. to Liberty St. by paving, sewerage, etc.

Mansfield, O.—County Commissioners have opened bids for construction of Orange St. bridge in this city and found lowest bidder to be Ohio Concrete Supply Co., its bid being \$13,333.13. The other bids were L. Wildeson & Son, \$16,970; Capital Contracting Co., \$13,975; Contract Construction Co., \$13,850; Simon Small & Sons Co., \$14,855; E. M. Schultz, Columbus, \$14,990, and Hughes-Keenan Co., \$14,925.

Middletown, O.—Following are paving bids recently opened by city engineer: Queen St.—Brick paving, Strodbeck Bros. Co., on Harris, Trimble and Puritan, \$9,539.23; on Nelsonville, Peebles wire cut or Metropolitan wire cut, \$9,639.87; on Webster, \$9,488.91. Arpp-Simpson Co., on Metropolitan, \$10,119.92; on Harris, \$10,119.28; on Puritan or Trimble, \$10,220.56. Asphaltic concrete, Strodbeck Bros., on Texaco or Aztec, \$8,281.23; Andrews Asphalt Paving Co., on Trinidad Lake, \$8,532.06; on any Mexican or Californian asphalt, \$7,828.48; Cleveland Trinidad Paving Co., on Trinidad Lake, \$8,807.84. Concrete paving, Strodbeck Bros., one course, \$6,500.03; Arpp-Simpson Co., \$7,402.64; two course, Strodbeck Bros., \$7,576.75. Bituminous macadam, Strodbeck Bros., on Lewisburg stone and tarvia, \$7,325.15; Arpp-Simpson Co., on Casperius stone and tarvia, \$7,000.08. Iglehart Ave.—Brick pavement, Strodbeck Bros., on Trimble, Puritan, Nelsonville, Webster, Peebles wire cut, Metropolitan wire cut or Harris block, \$2,403.60; Arpp-Simpson Co., on Metropolitan, Puritan or Trimble, \$2,329.30; on Harris block, \$2,311.30. Concrete paving, one course, Strodbeck Bros., \$1,809.60; Arpp-Simpson Co., \$1,852.30; two course, Strodbeck Bros., \$1,998.60. Woodlawn Ave.—Brick paving, Strodbeck Bros., on Trimble, Puritan or Harris, \$30,545.80; on Webster, \$30,745.80; on Nelsonville, Peebles wire cut or Metropolitan wire cut, \$31,205.40. The Scott & Walker Co., on Trimble,

\$31,841; on Metropolitan, \$31,687.80; on Harris, \$30,615.40. Asphaltic concrete, Strodbeck Bros., on Texaco or Aztec, \$27,222.20. Andrews Asphalt Paving Co., on Trinidad pitch, \$28,050.50; on any Mexican or Californian asphalt, \$25,905.70. Cleveland Trinidad Paving Co., on Trinidad pitch, \$29,166.60; Scott & Walker Co., on Trinidad pitch, \$29,083.40. Concrete paving, one course, Strodbeck Bros., \$21,860.20; Scott & Walker Co., \$24,181. Two course, Strodbeck Bros., \$25,077.40; Scott & Walker, \$27,245. Bituminous macadam, Strodbeck Bros., on Lewisburg stone and tarvia, \$25,345; Paul Menger, on Casperius stone and tarvia, \$22,585.10; Scott & Walker, Casperius stone and tarvia, \$24,656.20; on Casperius stone and Texaco, \$23,737. Sheet asphalt, Strodbeck Bros., on Texaco or Aztec, \$30,286.20; Andrews Asphalt Paving Co., on Trinidad, \$32,799.70, on any Mexican or Californian asphalt \$30,348.50; Cleveland Trinidad Paving Co., \$33,762.60; Scott & Walker, on Trinidad, \$32,607. First St.—Strodbeck Bros., on Puritan, Trimble or Harris, \$14,375.80; on Webster, \$14,311.80; on Peebles wire cut, Nelsonville or Metropolitan wire cut, \$14,503.80. Scott & Walker Co., on Trimble, \$14,920.55; on Metropolitan, \$14,856.55; on Harris, \$14,408.55. Sheet asphalt, Strodbeck Bros., on Texaco or Aztec, \$14,183.80. Andrews Asphalt Paving Co., on Trinidad, \$14,869.20; on any Mexican or Californian asphalt, \$13,843.20. Cleveland Trinidad Paving Co., on Trinidad, \$15,451.94. Scott & Walker Co., Trinidad, \$15,240.55. Bituminous macadam, Strodbeck Bros., on Lewisburg stone, \$11,687.80. Scott & Walker Co., Casperius stone and Tarvia, \$11,464.55; on Casperius stone and Texaco, \$11,080.55.

Salem, O.—Bids will be received by George Holmes, City Auditor, until noon Aug. 12 for purchase of bonds in sum of \$12,000 for improvement of various streets.

Toledo, O.—Bonds in sum of \$80,000 will be sold August 9, 1915, for construction of Jerusalem and Oregon Township Stone and Gravel Road No. 71, and bonds in sum of \$3,970 for Stone Road No. 62 in Adams Township.

Toledo, Ohio.—Ordinances have been passed for paving of several streets and alleys.

Youngstown, Ohio.—Resolutions have been adopted for improvement of various streets.

Portland, Ore.—With Skamania County to build road connecting with Clarke County on east, road will parallel Columbia River Highway now being hardsurfaced on Oregon shore. If Washington legislature in 1917 will appropriate \$200,000 to construct road direct from White Salmon to Lyle, a distance of 10 miles, it will open up country through Warwick and Centerville to Goldendale, and to Puget Sound and Eastern Washington.

Beaver, Pa.—Election will be held August 17 on \$30,000 bond issue for paving streets and constructing sewers.

Beaver Falls, Pa.—It is intention of Council to repave with new brick Seventh Ave., between Fifth and Seventh Sts., and superintendent of streets and public improvements was authorized to receive bids for that purpose.

Erie, Pa.—Ordinance has been passed for grading, curbing, paving and draining of several streets.

Johnstown, Pa.—Ordinance has been passed providing for opening and extending of Rose St. as public highway in Eighth Ward of the city of Johnstown, from its intersection with Confer Ave. to Franklin St.

Lebanon, Pa.—Ordinance has been passed providing for and authorizing paving and curbing of Park Ave. in Lebanon, between Locust St. and Schaefferstown Road.

Philadelphia, Pa.—Work valued at approximately \$300,000, for which bids will be received on August 10, 1915, was advertised July 29. The estimated costs of the several characters of work are as indicated: Grading, \$68,000; asphalt paving, \$69,000; vitrified block paving, \$7,000; granite block paving, \$13,000; asphalt repaving, \$23,000; vitrified block repaving, \$44,000; granite block repaving, \$20,000; surfacing bituminous macadam, \$15,000; surfacing water-bound macadam, \$29,000; resurfacing water-bound macadam, \$9,000; tornado gravel, \$3,000. Wm. H. Connell is Chief of Bureau.

Williamsport, Pa.—The first creosoted block pavement in city will be constructed this summer when Government

Place, between West Third and West Fourth Sts., will be paved with this material. The ordinance providing for the paving of this street has passed third reading and it is expected that work will be started on the paving of this street within next month.

Cranston, R. I.—At special meeting of Cranston city council an addition of \$25,000 was made to appropriations for highway department, amount previously appropriated for this department having been \$22,000.

Providence, R. I.—Bids upon 100,000 granite blocks to be used by city in paving highways were opened July 26 by board of contract and supply. The bids were referred to commissioner of public works. The bidders included Hooper, Havey & Co. of North Sullivan, Mass.; the Smith Granite Co., Westerly; Booth Bros., and Hurricane Isle Granite Co., both of New York City; Rockport Granite Co. of Rockport, Mass., and the New England Granite Works of Westerly.

Beaumont, Tex.—Road district has been created and election will be held August 28 on the issuance of \$100,000 bonds for public road improvement. The district embraces all of the southern half of the county, extending from Seneca to the Hardin County line and the plans now outlined contemplate the construction of about 125 miles of highway.

Dallas, Tex.—Williams St. between Crowds and Duncan will be paved with bitulithic at total cost of \$3,687.50, of which city's share will be \$12.50. Property owners had petitioned for paving at their expense.

Brigham City, Utah.—Work of rebuilding state highway between Hot Springs and Willard will begin at once and be rushed to completion. Stretch of road was built some years ago by convict labor and material used was crushed rock. In many places along five-mile road surface has blown off, leaving road very rough and rocky. Wherever road is in this condition it will be torn up and rebuilt.

Park City, Utah.—E. R. Morgan, state road engineer of Salt Lake, has met with county commissioners and mayor and city council relative to final arrangements to pave state road through this city. Work will commence within a few days.

Norfolk, Va.—Committee has appropriated \$6,000 for repairs to pavements.

Richmond, Va.—Maps of West End surveys showing grades at which streets and avenues in western part of city will cross Belt Line Railway and showing also how much Belt Line tracks will have to be lowered have been about completed and will probably be submitted to Administrative Board within the next few days.

Parkersburg, W. Va.—Bids will be received August 19 for bonds for paving and sewers to the extent of \$200,000. Paving will probably be brick and concrete.

Phillipi, W. Va.—Citizens have voted in favor of issuing \$20,000 in bonds, \$9,000 of which is for street paving.

Seattle, Wash.—Plans have been received for grading of 28th Ave. N. E. at cost of \$3,000 and for concrete walks on W. 58th St. to cost \$5,000.

Seattle, Wash.—Resolution has been passed for paving several streets with asphalt, constructing sidewalks and constructing sea wall with brick roadway on top.

Tacoma, Wash.—Specifications for several types of pavement upon which bids will be called for by county commissioners for paving of road in Puyallup valley from Alderton to Orting were submitted to State highway commissioner. The specifications, include one and two course concrete, brick, warrentite, bitulithic, asphalt, Topeka specification and others.

Lake Geneva, Wis.—Council has ordered 4 blocks of brick paving in alleys and will soon order about 3 miles of combined curb and gutter. J. G. Skeels is City Engineer.

CONTRACTS AWARDED.

Ashdown, Ark.—Jas. G. Sanderson, of this city, has been awarded contract to build system of roads in Road Improvement District No. 1, formed under Alexander road act. Roads will be built of gravel. District at present embraces 16 miles. Mr. Sanderson bid \$44,928, or \$2,808 per mile. Seven bids were received. Contract includes grading, excavations, gravel and concrete work with the exception of an 80-ft. span steel bridge at

Pine Prairie. Contracts for bridges on the roads to be built will be awarded later. Roads are to be completed in 130 days.

Livermore, Cal.—By city trustees, contract for street paving, to California Bitulithic Co., at \$64,696.

Los Angeles, Cal.—For improving Evergreen Ave., from Harrison to Wabash Ave., to F. W. Whittier, at \$7,984; York Blvd., from Ave. 45 to Ave. 54, to Benjamin F. Ford and Fred H. Stout, at \$64,062.

Los Angeles, Cal.—By city to L. A. Paving Co. for all labor and material for improving portion of Alameda St. Consideration \$1.95 sq. ft. for paving, 60 cts. lin. ft. for grading, 35 cts. lin. ft. for cement curbs, \$1.95 sq. ft. for gutters.

Los Angeles, Cal.—For improvement of Alessandro St., contract was awarded July 19 to The California-Arizona Const. Co., at following bid: 17.9-10 cts. per sq. ft. for asphalt paving, Specifications No. 96. 07 5-10 cts. per sq. ft. for asphalt wearing surface and asphaltic cement paint binder, to be laid on existing gutters, Specifications No. 96. 35 cts. per lin. ft. for cement curb, Class A, Specifications No. 88. 42 1-10 cts. per sq. ft. for granite block gutter, Specifications No. 71. 11 cts. per sq. ft. for cement sidewalk, Specifications No. 84. Also for improvement of Beacon St. to Fairchild-Gilmore-Wilton Co., at following bid: 17.5-10 cts. per sq. ft. for asphalt paving, Specifications No. 96. 3 cts. per sq. ft. for grading and subgrade, Specifications No. 96. 15 cts. per sq. ft. for asphalt repaving, Specifications No. 96. 35 cts. per lin. ft. for cement curb, Class A, Specifications No. 88. \$100 for storm drain and appurtenances, complete, Specifications No. 87.

Los Banos, Cal.—For paving and improving 14 blocks, to W. H. Worswick, Jr., Fresno, at \$48,810.

Oroville, Cal.—At meeting of city trustees the Clark & Henery Const. Co. was awarded contract for paving Montgomery St. from Lincoln St. to Fourth Ave. Clark & Henery submitted only bid. Total cost of filling in and paving will be \$15,700.

San Diego, Cal.—To pave C St. from 16th to 19th St. will cost the property owners \$6.60 per front foot, according to report of Manager of Operations Lockwood to council. The council has awarded the contract to Arizona-California Const. Co. for \$8,351. The bid of the Fairchild-Gilmore-Wilton Co. was only \$39 less.

Salinas, Cal.—City council has decided to accept offer of the Austin Western Mfg. Co., Chicago, Ill., of \$3,150, for their gasoline street roller.

Santa Ana, Cal.—On July 20 board of supervisors let contract to Oscar Ford, contractor, mayor of Riverside, for paving of 3.32 miles known as Garden Grove-Westminster Road. Ford's bid of \$10,606.01 was lowest of eight bids received and on recommendation of county highway commissioner contract was let to Ford.

Santa Ana, Cal.—White & Gaskill, contractors of Long Beach, have been awarded contracts for constructing two units of state highway in Tulare county at \$45,190.29. The estimate was \$52,994.38.

Glastonbury, Conn.—For paving Nubuc Ave. with macadam, to R. G. Miller Construction Co.

Wilmington, Del.—Contracts have been awarded by Street and Sewer Department for supplies for city's work for a year beginning August 1. Successful bidders were Lobdell Car Wheel Co., iron castings, comprising manhole covers and frames at \$4 and \$4.25 less than the Hilles & Jones Co.; cement and terra cotta, the Charles Warner Co., at \$1.65 less than the Edward R. Pusey Co. The Pusey Co. got contract for sand at 69 cts., underbidding the Delaware Terra Cotta Co. and the Charles Warner Co. The James B. Oberly and Delaware Terra Cotta Co. tied at \$12 for brick. Contract will be divided.

Indianapolis, Ind.—By Marion County Commissioners for construction of crushed stone road between Perry & Franklin townships, to McKinsey & Jenkins, Frankfort, Ind., at \$14,975.

South Bend, Ind.—Van Skylark & Middleton were given contract to construct three culverts by county commissioners July 25. The McCombs culvert in Clay township will cost \$352; the Ullery culvert in same township will cost \$546, and culvert south of Osceola in Penn township will cost \$229. Rejected bids on this work were entered by Wagner & Ellis and Isaac J. Knoblock.

Centerville, Ia.—Paving contract which

was let July 22 by city council to D. E. Keeler Co. of Davenport, Ia., must be completed by Dec. 1, and work will be started the first of August. The contract was let on the following bid: Brick paving, sand filler, \$1.98; brick paving, cement filler, \$2.02; brick paving, asphalt filler, \$2.07; coarse concrete paving, sq. yd., \$1.32; concrete curb, 5x20, lin. ft., 30 cts.; curb and gutter, lin. ft., 49 cts.; park gutter, lin. ft., 30 cts.; header curb, 25 cts.; false curb, lin. ft., 25 cts.; gutter plate, per lb., 4 cts.; inlets, each, \$17.50; 24-in. sewer, 90 cts.; extra grading, 35 cts.

Grundy Center, Iowa.—At special meeting of town council contract for fourteen blocks of asphaltic concrete pavement was let to Ford Paving Co. of Cedar Rapids. The price of this pavement is \$1.65. There are but few blocks of this new pavement that will be used for heavy hauling, most of it being in residence districts.

Oelwein, Ia.—For asphaltic concrete, bitulithic and brick block pavement as follows: Class A, using Trinidad asphalt—Asphaltic concrete: First, Second and Third Aves. and Fourth St. north—Western Improvement Co., Racine, Wis. The cost of this will be \$1.46 per sq. yd. This company will also pave West Charles St. bridge with brick blocks at \$2.15 per sq. yd. Bitulithic, First and Second Sts. and Fourth Ave. south, First and Fifth Sts. east, and First Ave. west—Ford Paving Co., Cedar Rapids. This was let at \$1.99½ per sq. yd. Portland cement concrete, the alleys to be paved—Dearborn Construction Co., Waterloo. The price of this is \$1.23 per sq. yd. and is to be laid in one course of six inches in thickness.

Hutchinson, Kan.—Let to Stanley & Mackey, Hutchinson, for 18,000 yards brick pavement on concrete base and 4,500 cubic yards, earth excavation. Prices, paving, \$1.43; excavation, 32 cts.

Newton, Kan.—City commission by vote has accepted bid of A. Jacks Pav. Co. for additional paving contracts, prices being same as those already signed up. These contracts cover following: E. and W. 8th St., Pine St., S. 2d along the block north of Bethel Hospital, Muse Ave. from S. 2d St. to 1st, and Walnut St. This makes total of 28 blocks, or 43,001 sq. ft. of paving, and estimated excavation of 13,450 cu. ft. Price is \$1.18 for paving, 7 cts. per cu. yd. for excavation and 12 cts. a yd. for overhead expense. It is found that expense thus far on paving already done is running about 2 cts. per yd. less than estimate on the contract price, or approximately \$1.35 per yd. for job complete.

Elkton, Ky.—Contract for building 4½ miles of model pike from city limits of Elkton to Logan County line, near Daysville, has been awarded by Todd Fiscal Court to Roy L. Gowell, of Russellville, whose bid was \$17,445.25. Of this sum about \$3,500 will be for bridges. Work will begin next week, contract calling for completion of road by Dec. 1.

Amite, La.—Spencer Fendelson, Ponchatoula, and J. W. Walker, Madisonville, have been awarded the contract by Tangipahoe Parish for constructing 7½ miles and 11½ miles of dirt road, respectively.

Augusta, Me.—By State highway commissioner for highways, as follows: Ahern Construction Co., Willimantic, Conn., State highway in Hermon, a distance of 1.09 miles, and highway in Ellsworth, a distance of .78 miles, \$7,368.80 and \$5,610.20. Jas. H. Kerr, Rumford, Me., highway in Monson, a distance of 2.27 miles, \$13,850.42.

Beverly, Mass.—M. McDonough, a prominent Swampscott contractor, lowest of six bidders on Rantoul St. smooth paving job, was awarded contract for work at meeting of city council public service committee.

Fall River, Mass.—Contract formally awarded by Mayor Kay and Supt. of Streets Wolstenholme to Warren Bros. Co., of Boston, calls for new construction and resurfacing to cover 25,000 sq. yds. This will represent an outlay approximately from \$40,000 to \$50,000. Under terms of contract price for new bitulithic will be \$2 per sq. yd. Price for resurfacing will be \$1.55 per sq. yd. and stone for base will be furnished by the city. Work will be started within two weeks.

Duluth, Minn.—Contract for improvement of Sixth alley from Third Ave. west to Fourth Ave. west, was awarded to Andrew Swanson, at \$993.76.

Duluth, Minn.—Contract for furnishing one tamper machine with 3 h.p. Novo engine was awarded July 19 to

Pawling & Harnischfeger Co., Milwaukee, Wis., at \$550.

Duluth, Minn.—Contracts were awarded to J. Johnson for paving Second alley from 24th Ave. east to 25th Ave., on his bid of \$1,657.36, and to Oldson & Johnson on their bid of \$3,974.70 for paving 20th Ave. west from Superior to First St.

Laurel, Miss.—For paving number of streets, to Southern Paving & Construction Co., Chattanooga, at about \$95,000.

Haddonfield, N. J.—Manwaring & Cummings, Philadelphia, awarded contract at about \$16,700, for resurfacing borough streets.

Albany, N. Y.—Contracts for street improvement work representing nearly \$200,000 were awarded July 26 by board of contract and supply. State St. will be repaved from Lark St. to Western Ave. at an expenditure of \$30,271.40. John H. Cramond was awarded the contract. Gleason & Davitt were awarded the contract for the improvement of Bancker St., Main Ave., Mercer St., Park Ave., Peyster St., Ryckmann Ave. and Warren St. for \$95,618.17. The contract for the improvement of Sand St. from Second Ave. northerly about 380 ft. was awarded to John H. Cramond for \$5,854. The Langan Const. Corp. was awarded the contract for the improvement of Quail St. from Woodlawn Ave. to New Scotland Ave. for \$4,172.20. Benj. F. Mulderry was awarded the contract for \$12,488.67 for the improvement of 3d St. from Judson St. to N. Lake Ave. The contract for the improvement of Gledale and Highland Aves. went to Gleason & Davitt for \$17,756.50. Martin Murray & Co. of Troy were awarded the contract for grading a portion of the easterly section of Beaver Park for \$30,743.10.

Rochester, N. Y.—Contracts for improvements have been awarded by board of contract and supply, and board also rejected all bids on Waring Road asphalt on ground that they were excessive. Contracts awarded follow: Culver Road asphalt pavement, Whitmore, Rauber & Vicinus, \$35,676; Congress Ave. walks and grading, A. Petrossi, \$1,414; Conklin St. grading and walks, A. Petrossi, \$407.50; Wolff St. sewer, K. Passero, \$536; Genesee St. walks, Genesee Contracting Co., \$218.50; Brooks Ave. walks, Genesee Contracting Co., \$351; Pitkin St. asphalt pavement and sewer, Julius Friedrich Co., \$3,787; Tonawanda St. asphalt pavement, Julius Friedrich Co., \$4,255.

Salamanca, N. Y.—For pavement and concrete sidewalks, contracts were let as follows: Pavement, H. E. Bunce, Olean, N. Y., at \$28,000; sidewalks, D. H. Coggin, Fredonia, N. Y., at \$13,000. George H. Elliott is city clerk.

Schenectady, N. Y.—Bid of the Barrett Manufacturing Co. of New York City, to furnish 27,000 gallons of bituminous road material at \$.0825 a gallon, or \$2,227.50, was accepted at meeting of board of contract and supply July 28.

Schenectady, N. Y.—The Board of Contract and Supply has awarded the contract for the furnishing of the 27,000 gallons of bituminous road material to the Barrett Manufacturing Co., of New York City, on their bid of 3/4 cts. a gallon, after throwing out the bid of the John Baker, Jr., Co., which had changed the specifications and offered another material for 6 4-5 cts. a gallon.

Syracuse, N. Y.—Board has awarded to Austin Western Road Machine Co., Chicago, Ill., at \$425, contract for a street sweeping machine for department of public works.

Yonkers, N. Y.—The John L. Hayes Const. Co. of this city has been awarded the largest state road contract ever given out in New York. It is for construction of road from West Point to Cornwall along the river. The Hayes Co.'s bid was \$273,900.

Watertown, N. Y.—To Charles J. Haley for construction of curbing in Brainard St. at 58 cts. per ft and 10 cts. for walks, a total of \$1,805.40. Other bidders were: Mooney & Lillie, at \$1,825.70 and Gooley & Allard at \$1,827.85.

Ashley, Ohio.—For paving to C. W. Riddle of Delaware at \$6,500.

Bowling Green, O.—Board of Control has accepted bid of Marsman & Green to improve with reinforced concrete North Grove St. from intersection with the brick at Clay St. to Evers Ave. The same firm bid \$2,270.28 for tar bound macadam instead of concrete. M. L. Deckard bid \$2,293.10 for tar bound macadam. Bids on both kinds of pavement included putting in concrete gutter and

curbing. There will be 1,200 ft. of curbing.

Cincinnati, O.—For improving Glenway Ave., from Warsaw Ave. to wood block pavement at West Line Section 36, to Kirchner Construction Co., Cincinnati, at \$79,752, and for improving Montgomery Rd. from Gilbert Ave. to Norfolk & Western Ry., to Kirchner Construction Co., Cincinnati, at \$86,949.

Columbus, O.—Contract for building 2.45 miles of Cincinnati-Dayton Rd., in Montgomery County, was let by State Highway Commissioner Cowen, July 23, to Strodick Bros., of Middletown, for \$62,359.

Columbus, O.—Contract for paving principal street in West Jefferson was awarded to Andrews Paving Co., of Hamilton, on its bid of \$1.59 a sq. yd. Work will start at once on the improvement, which will represent an expenditure of \$40,000.

Lima, Ohio.—Michael O'Brien, contractor of this city, will build Lima-Spencer road, or that part of it in Amanda and Spencer townships, a distance of 3.11 miles. His bid of \$29,894 was accepted by State of Ohio. Soulesley & Bathkins, Ada, were awarded contract for construction of 1.48 miles of the macadam Ada-Forest road upon their bid of \$12,274. Isaac Putnam, Van Wert, was awarded contract for 2.10 miles of the Van Wert-Rockford macadam road upon his bid of \$16,500.

Logan, O.—Bids will be received until Aug. 10 by Fred Allen, Village Clk., for the purchase of \$33,000 in bonds, the proceeds to be used for grading, curbing and paving with brick on Second St.

Marion, O.—Frank Darst was awarded contracts for laying sandstone sidewalks on four streets at following bids: Glad St., Berea stone, \$1,172.01; Curve St., Fulton stone, \$230.28; Polk St., Fulton stone, \$501; Clay St., Fulton stone, \$344.40. Foos & Walton were awarded contracts for the sidewalks on the east side and west side of Ballentine Ave. at respective bids of \$431.40 and \$262.80.

New Philadelphia, O.—For improving Section 1 of Oldtown road improvement in Gashen and York Townships, to W. M. Brode Co., Newcomerstown, at approximately \$16,500.

Sandusky, Ohio.—To A. G. O'Donnell, 905 Camp St., contractor, at \$21,443, for 9,187 sq. yds. brick paving on Monroe St. R. L. J. Wagar is engineer.

Tiffin, O.—For paving Coe and East Market St., to John E. King, Tiffin, and West Davis and Wentz Sts., to Louis Schander, Tiffin.

Youngstown, O.—City Board of Control has let contracts to additional work at Milton dam, and also for about \$18,000 worth of street improvements, as follows: Lorain St., grading, A. O'Horo, \$515.80; Petrie St., paving, F. Diorio, \$1,553.60; Emerald St. paving, M. F. Clarke, \$4,611.80; Adams St., paving, M. F. Clarke, \$5,948.25; Brockway Ave., sewer, A. O'Horo, \$2,652.15; Tippecanoe Ave., sewer, E. Conicote, \$975.90; Silliman St., sewer, A. O'Horo, \$984.85; Craven St., grading, E. Diorio, \$1,186.30.

Zanesville, Ohio.—For paving with brick as follows: Ball St., A. Emery & Son, at \$4,448.57. Howard St., Muskingum Contracting Co., at \$2,525.40. W. W. Roach is director of public service.

Philadelphia, Pa.—About 50 contracts for street improvement work were awarded July 29 by Acting Director Northime. This work will cost city about \$400,000. The biggest of contracts was awarded to Senator "Ed" Vare, for repaving of Passyunk Ave. with wood block from South St. to 18th St. Price is \$98,004.

Philadelphia, Pa.—Following contracts have been let: Repaving with wood block Passyunk Ave. from South to 18th Sts., Edwin H. Vare, \$98,004.07; Fourth St., Market to Walnut St., McNichol Paving & Construction Co., \$10,147.15; 11th St., Arch to Market, Philadelphia Paving Co., \$5,606.55. Repaving with asphalt, Fairmount Ave., Broad to 19th Sts. and 20th St. to Pennsylvania Ave., Union Paving & Construction Co., \$40,939.05; 29th St., York to Cumberland, Union Paving & Construction Co., \$575.59; Mifflin St., 18th to Woodstock St., Union Paving & Construction Co., \$5,261.80; 18th St., Tioga to Venango Sts., Union Paving & Construction Co., \$5,261.80. Grading Cobbs Creek Parkway, between Larchwood and Spruce Sts., J. A. Mullin, \$8,832.02; Stenton Ave., Limekiln pike to Eastburn St., O'Neill & Co., \$4,083.33. Paving with asphalt, Second St., Tabor road to Chew St., Eastern Paving Co., \$9,990.88; Sixth St. to Ans-

bury and Cayuga Sts., Union Paving & Construction Co., \$5,746.58; Cobbs Creek Parkway, Florence to Shale Sts., Union Paving Co., \$19,231.60; Hunting Park Ave., between Bristol and 15th Sts., Eastern Paving Co., \$7,779.48; Olney Ave., Third to Mascher Sts., Union Paving Co., \$7,564.29; Somerville St., Sixth to American Sts., Union Paving Co., \$10,424.70; Lycoming St., between Ninth and Tenth Sts., Eastern Paving Co., \$9,841. Paving with vitrified brick, Tenth St., Rockland to Ruscomb Sts., Cunningham Paving & Construction Co., \$5,026; Price St., Sprague to Ardleigh and Sprague St., between Chelton Ave. and Price St., Cunningham Paving & Construction Co., \$6,654.76. Repaving with granite block, Seventh St., Arch to Walnut Sts., Mack Paving Co., \$14,744.42; Germantown Ave., Diamond St. to Susquehanna Ave., J. J. McHugh, \$11,528.88. Resurfacing with asphalt, Moore St. between Second and Sixth Sts., Union Paving Co., \$6,704.84.

Pittsburgh, Pa.—Four contracts were let July 24 by the County Commissioners for work on bridges and roads in the county. The contract for changing the course of Pike Creek, eliminating county bridges Nos. 17 and 18 in Shaler Township, was awarded to J. Toner Barr for \$11,290. The reinforcing of arches on bridge No. 3 over Deer Creek, in Richland Township, was awarded to John H. Howley & Co., for \$5,887.40. The Adam Laidlow Co. was awarded the contract for the extension of an arch on bridge No. 1 over Kilbuck run in Glenfield borough, their bid being \$9,547.50. The contract for the building of a reinforced arch over bridge No. 4 on Flaugherty's run, in Moon Township, was awarded to C. M. Haggart, his bid being \$5,131.

Maynardville, Tenn.—Bids will be received until Aug. 23 by the Co. Comrs. of Union Co. for the purchase of \$100,000 bonds. The proceeds to be used for the construction of roads and bridges.

Dallas, Tex.—Contract for grading Lucile St. from Munger Ave. to Lafayette has been awarded to D. J. Lynch on his bid of \$1,162.40.

San Antonio, Tex.—Following paving contracts were recently awarded: Uvalde Rock Asphalt Co., Camden St., Uvalde rock 2 ins., 5-in. base, 2,520 sq. yds., \$25,737, \$2.04 unit price; O. C. Chapin, Grayson St., reinforced concrete, bituminous wearing surface, 10,540 sq. yds., \$19,821.50, \$1.87 unit price; Western Paving Co., Josephine St., 2-in. asphaltic concrete, 5-in. base, 5,850 sq. yds., \$1,104.90, \$1.95 unit price; Roach-Manigan Paving Co., Ave. C., 3-in. wood block, 5-in. base, 17,770 sq. yds., \$52,086.55, \$2.92 unit price; Roach-Manigan Paving Co., Navarro St., 3 1/2-in. wood block, 5-in. base, 3,530 sq. yds., \$11,090.75, \$3.12 unit price; Rushmore & Gowdy East Houston St., 3-in. wood blocks, 5-in. base, 11,320 sq. yds., \$33,400, \$2.95 unit price; Texas Granitoid Co., South Presa St., granitoid paving, 13,600 sq. yds., \$32,882.50, \$2.40 unit price; Western Paving Co., River Ave., 2-in. asphaltic concrete, 5-in. base, 13,772 sq. yds., \$27,004.36, \$1.95 unit price; Texas Granitoid Co., South Flores St., granitoid paving, 13,110 sq. yds., \$34,742.65, \$2.32 unit price; Eureka Paving Co., San Pedro Ave., 2 1/2-in. asphaltic concrete, 5-in. base, 15,320 sq. yds., \$33,973.48, \$2.20 unit price; Rushmore & Gowdy, South Flores St., 3-in. brick, 5-in. base, 14,600 sq. yds., \$37,988.65, \$2.583 unit price; Granitoid Paving Co., South Presa St., granitoid paving, 9,980 sq. yds., \$24,195.90, \$2.41 unit price; Rushmore & Gowdy, Market St., 3 1/2-in. wood blocks, 5-in. base, 5,590 sq. yds., \$17,511.30, \$3.11 unit price.

Seattle, Wash.—For brick paving of Horton St., to D. H. Traphagen at \$20,555.40.

Tacoma, Wash.—City Council awarded on July 23 contract for construction of an asphalt road in South End to McHugh Construction Co. The road, which will cost a trifle more than \$32,000, will extend from paved end of Cedar St. to paving at South 36th and Warner Sts. This will provide straightaway paved road from Tacoma for miles south of the city.

Sheboygan, Wis.—Peter Sinner was awarded contract for paving Grant Ave. from Fourth to Fifth Sts on July 21, by Board of Public Works. His bid was \$1,605.28.

Niagara Falls, Ont., Can.—The Fort Erie Council has let contracts for three sections of macadamized roadways authorized by a bylaw passed June 21.

Bid of W. H. Johnston for \$6,500 was accepted. The sections are: Queen St., full length; Goderich St., from Queen to Garrison St.; Garrison St. from Goderich to village line, to connect with the county system. There was only one bid for concrete section from the ferry landing south of Queen St. It was for \$3,900 and considered high, so Council has arranged to receive other proposals.

SEWERAGE

Marysville, Cal.—Tuesday, August 24, has been chosen by the Marysville City Council as date for bond election for purpose of raising \$18,000 for improvements, principally extension of E St. sewer from Ninth St. to 14th St., by way of D St., and abatement of nuisance existing at present outlet of sewer.

Salinas, Cal.—The storm water sewer matter has been discussed and it was voted to authorize City Engineer Davies to prepare plans and specifications for complete system of storm sewer drainage for entire city.

Wilmington, Del.—Bids will be received Aug. 12 for \$50,000 of bonds to be used for extension of sewerage system.

Springfield, Ill.—Ordinance providing for extension of Town Branch sewer to point 1,000 ft. from present stopping place will be introduced.

Elliott, Ia.—Theodore S. DeLay of Creston is busy on preliminary survey for sanitary and drainage sewer system, which will be installed in Elliott in near future. At present time it is thought there will be plenty of fall for sewer, but survey is made so this may be accurately ascertained.

Keokuk, Ia.—Council has passed a resolution ordering construction of sewers.

Salina, Kan.—Ordinance has been passed providing for construction of certain sewers in city of Salina.

Andover, Mass.—At meeting of board of selectmen held on July 20, bids for \$60,000 issue of \$100 four per cent. bonds for construction of Abbott and Marland Village sewerage system were opened and entire issue awarded to E. M. Farnsworth Co. of Boston, who were highest bidders.

Duluth, Minn.—An immense trunk sewer, larger than any now to be found in Duluth, which will handle sewage and water from eastern central part of business section, is next improvement on city works division program. About \$40,000 is involved.

Duluth, Minn.—A sanitary sewer will be built in Dodge St. from 54th Ave. east, west to a point 350 ft. from the west line of block 100, Morris Park division of Lakeside.

Meridian, Miss.—Bond issue of \$10,000 has been voted for sanitary sewerage.

Poplar Bluff, Mo.—Bids will be received up to 7:30 p.m., August 16, by City Council for construction of sanitary sewers in Sewer District Number Two (2). Vitrified pipe from 6 in. to 12 in., approximately 27,000 ft.; Duplex Ejector Plant; 35 manholes. Edward C. Thomas is city engineer.

Irrington, N. J.—Town clerk has been authorized to advertise for bids for construction of sanitary sewer to 19th St., from Speedway to Myrtle Ave., and for laying and relaying sidewalks in Howard St.

Neptune, N. J.—Construction of sewers has been ordered.

Pleasantville, N. J.—Plans and specifications are being prepared by Remington & Vosbury, Camden, N. J., for a sewerage system and disposal plant. Approximate cost of work will be \$100,000.

Trenton, N. J.—Ordinance has been passed to authorize construction of sewer No. 631, in Dayton St. and alley lying between Grand and Adeline Sts.

Trenton, N. J.—Ordinance has been passed for construction of sewer No. 632 in Parkway Ave.

Long Island City, L. I., N. Y.—That work will begin soon on Maspeth outlet sewer was assured when there was transmitted from office of Borough President Connolly to Corporation Counsel advertisements for this improvement. This sewer will cost more than \$300,000 and will be one of important improvements in borough. It will give facilities to district where there has been more than \$1,000,000 spent in building operations last two years. Bidding for contract will be not later than middle of next month.

Rochester, N. Y.—See "Miscellaneous."

Schenectady, N. Y.—Ordinance for laying of 20-in. sanitary sewer in Union Ave. from Union St. to University Pl. was adopted, unanimous consent having first been given for its consideration.

Bowling Green, O.—Chief Engineer W. H. Dittoe of the State Board of Health is considering with four of councilmen and City Auditor Sweet a sewerage disposal plant for this city. He carefully explained State's wishes in case and explained details of plans.

Girard, O.—Ordinance was passed declaring it necessary to construct sewer in Prospect St. from North Ave. to the termination of the street near the Erie tracks.

Hamilton, Ohio.—At meeting of board of control plans were made to hire special engineer to make plans for sewerage disposal plant and for Lindenwald and East Hamilton sewer systems and to help in planning improvements to water works system.

Massillon, O.—Council has ordered construction of sanitary sewer in South Lincoln Ave., between Walnut and Maple Sts.

Middletown, O.—Resolution has been adopted declaring it necessary to improve by sewerage Logan Ave. from Crawford St. to Sutphin Ave., by construction therein of tile storm and sanitary sewer and house connections.

Newark, Ohio.—Resolution has been adopted declaring it necessary to improve North Fifth St., from Chestnut St. to Hoover St., by constructing sanitary and drainage sewer therein.

Port Clinton, O.—Council has taken steps to improve new Brocade addition to the town. It was decided to issue necessary bonds for enlargement and extension of Madison St. sewer from 3d St. to new addition, and also to instruct property owners to lay sidewalks. Rapid development is expected.

Erie, Pa.—Ordinance has been passed for construction of sewers in various streets.

Exeter, Pa.—Four bids were received by Exeter Borough Council July 21 on sanitary sewer system to be constructed on Lincoln Ave. Cedar and Grant Sts. According to plans the sewer is to be laid along Cedar St., from Penn Ave. to Grant St.; Lincoln Ave., from Cedar St. to Wyoming Ave.; Grant St., from Cedar to Wyoming Ave. The bids received were: Joseph Banks, Wilkes-Barre, \$5,329; H. R. Conway, Wilkes-Barre, \$5,350; Thomas Bros., Avoca, \$6,144; Thomas Walsh, Exeter, \$5,933. Joseph Banks of Wilkes-Barre was lowest bidder. The contract was not awarded, but on motion, bids were referred to the sewer committee.

West Chester, Pa.—Plans and specifications are being prepared by Nathan Rambo, borough engineer, and Remington & Vosbury, consulting engineers, Camden, N. J., for a sewage pumping station and cast-iron force main.

Santa Anna, Tex.—Citizens have voted to issue \$6,000 in bonds for construction of sewer system.

Parkersburg, W. Va.—City will construct sewers in ten streets and paving with proceeds of \$200,000 bond sale which will be held Aug. 19.

North Yakima, Wash.—Issuance of city bonds to amount of \$50,000 and construction next winter of two drains across northwestern portion of city, is remedy practically determined upon by City Commissioners to take care of excess water from irrigation which annually comes down from Fruitvale district above, floods cellars and turns lowlands into fishing ponds.

Seattle, Wash.—Plans have been received for construction of sewers on Sixth Ave. Northwest, estimated cost \$90,000.

Chippewa, Wis.—Ordinances have been adopted for construction of sewer on Maynard, Front and Maple Sts.

Janesville, Wis.—Resolution has been adopted for laying of lateral sewers or drains, water and gas services on South Bluff St., between Oakland Ave. and Clark St. J. P. Hammarlund is city clerk.

Victoria, B. C.—Council is planning expenditure of \$74,654 for paving and sewer construction by day labor.

CONTRACTS AWARDED.

Sacramento, Cal.—James Kennedy of Fargo, N. D., has been awarded the contract by city for Unit No. 4 of the concrete sewer in East Sacramento on Montclair Ave. and along Burns slough for \$37,280.

Clayton, Del.—For construction of

sewer disposal plant, to Ambler, Davis & Co., Philadelphia, Pa.

Logansport, Ind.—By Board of Public Works to Palmer, Moore & Co., at \$4,151.83, for Michigan Ave. sewer, requiring 10 to 24-in. vit. pipe.

Markle, Ind.—Five contractors bid on Markle sewer system July 24 at special meeting of town board. Thomas McGovern, of Wabash, was lowest bidder, with \$11,510, and board accepted his offer. He is to give bond and enter into contract within ten days. Other contractors and their bids were: Hipskind, of Wabash, \$11,721; Nipp, of Vincennes, \$12,120; Keefe & Bailey, of Huntington, \$12,313; Martin Koch, Huntington, \$12,693. Other contractors were present, but did not compete for the job. There is to be 7,300 ft. in the system, the main line being on Spark St., with branches on Lee and Clark.

Waterloo, Ia.—Petitions for sewers in outlying districts were approved at regular meeting of City Council July 26, and contracts for constructing two new sewers were awarded. Petition and waivers for sewers on Summit Ave. were received and the contract for the work was awarded to John Nelson. The contract price was 72 cts. for 10-in. sewer and 80 cts. for 12-in. The Dearborn Construction Co. was awarded contract for constructing sewers in Rosehill addition. The contract price was \$1 per lin. ft.

Clyde, Kan.—For sewer construction to Ely Construction Co., Wellington, Kan., at \$15,891.80.

Clyde, Kan.—For construction of sewer system, to Bash & James, Joplin, Mo., at \$15,299. Other bids were: F. A. Johnson, Kansas City, \$17,275; Axtel G. Oldham, Kansas City, Mo., \$15,915; James Stanton Leavenworth, \$19,254; Eby Construction Co., Wellington, \$15,591; Inter Mountain Bridge & Construction Co., Tecumseh, Neb., \$18,122; Gilkeson & Martin, Muskogee, Okla., \$17,485; McCoy & Taylor, Kansas City, Mo., \$20,309; Tonkawa Construction Co., Kansas City, Mo., at \$16,640.

Pratt, Kan.—For sewer construction, to Launder Construction Co., Kansas City, Mo., at \$11,500.

Andover, Mass.—Contract for construction of so-called Abbott Village sewer was awarded July 23 by Board of Public Works to Cuesdella & Co. of Milford. This concern was lowest of eight bidders, their figure being \$39,739.60. Phil Holland of Lawrence was next lowest bidder, with figure of \$39,980.

Andover, Mass.—Cenedella & Co., local building contractors, were on July 21 awarded a job to put in a \$50,000 sewer system for town of Andover.

Andover, Mass.—By Board of Public Works, for construction of Abbott and Marland sewer system, to Cenedella & Co., Milford, at \$39,739. Other bids were: Philip Holland, \$39,980; F. E. McDonough, \$46,000; J. Wagenbauch, \$40,242; D. Sheehan, \$46,000; J. J. Evans, \$41,200; Rosso & Co., \$40,700; C. E. Trumbull Co., \$45,000; Morrison & Young, \$45,891.

Grand Rapids, Mich.—For construction of approximately 6 miles of 8 to 18-in. pipe sewers and a sewage disposal plant, to A. H. Prange, Grand Rapids, at \$37,000. Other bids were: Harry Vander View, \$37,500; J. N. Bick, \$38,200; Whaley & Edwards, \$38,300; Allegany County Construction Co., \$39,300; Verhey & Kart, \$40,000.

East Grand Rapids, Mich.—To Albert H. Prange, contractor, at \$36,915.80, for sewer system.

East Grand Rapids, Mich.—Albert H. Prange, Lake Drive, Grand Rapids, awarded contract for installation of sewer system estimated to cost, with disposal plant, \$50,000.

Eveleth, Minn.—The Eveleth Construction Co. was low bidder July 20 for contract for building septic tank for disposal of Eveleth's sewage. Bid of construction company was approximately \$6,000 under bid of Lawrence-McCann Co. of Eveleth, and approximately \$18,000 under the offer of Winston Bros. Co. of Hibbing. Bids submitted were as follows: Eveleth Construction Co., \$34,880; Lawrence-McCann Co., \$40,965; Winston Bros. Co., \$52,848.47.

Eveleth, Minn.—Eveleth Const. Co. was low bidder July 21 for contract for building septic tank for disposal of Eveleth's sewage. Bid of construction company was approximately \$6,000 under bid of Lawrence-McCann Co., of Eveleth, and approximately \$18,000 under the offer of Winston Bros. Co. of Hibbing. Bids submitted were as follows: Eveleth Const. Co., \$34,880; Lawrence-McCann Co., \$40,965; Winston Bros. Co., \$52,848.47. Owing to fact that city did not

levy enough money to complete sewage disposal plant this year, only part of contract was let. Low bidder was given a contract for tank and sludge beds at \$12,595. Remainder of the job will be let next year.

Little Falls, Minn.—The Grand Forks Concrete Co. was only bidder when the Board of Public Works met July 26 to let contract for Third St. sewer, and was given contract for \$13,395.

St. Paul, Minn.—To Christ Johnson, at \$1,163.10, for sewer on Bradley St., from Maryland St. to Brainerd St.

Elizabeth, N. J.—Contract was awarded to M. Rinaldo to construct a storm sewer in Bayway, from Park Ave. to Wwoming Ave., at a cost of \$672.

Brooklyn, N. Y.—For sewer construction, to Stanhope Contracting Co., 404 Stanhope St., Brooklyn, at \$15,995, for constructing sewers in 15th St., and to John C. Schrade, Inc., 2132 Beverly Rd., Brooklyn, at \$2,503, for constructing sewers in Gravesend Ave.; also for installing complete mechanical equipment at the 26th Ward Disposal Works, at Hendrix St. and Vandalla Ave., to North Eastern Construction Co., 225 Fifth Ave., N. Y., at \$4,698.

Hudson, N. Y.—To Thomas Hanson and S. J. Law for constructing 15-in. tile sewers at \$522.80. Patterson & Malone bid \$731.20.

New York City, N. Y.—For sewer construction contracts have been awarded to Kingsbridge Contracting Co. at \$144,404, for constructing sewers in East 41st St., and in Madison Ave., and to the Laconia Contracting Co., at \$10,926, for constructing sewers in Wall St.; also for improving sewer in 32d St. from Broadway to Fifth Ave., to P. J. Kearns at \$7,198.

Cincinnati, O.—Philip Fordick, Dir. Dept. of Public Service, let contracts as follows: Carl St. sewer, from Beekman St., 1,300 ft. west, Connelly Constr. Co., 315 E. Eighth St., \$4,625.72; Glenmore, Schwartz and Werk road sewers, John B. McLane & Co., \$12,271.10; Clinton Springs Ave., from Dickson to Washburn Ave., John B. McLane & Co., \$2,706.70; Kirby road, from Frederick St., 1,200 ft. northwest, M. J. Connelly, Jr., 636 W. Eighth St., \$5,226.46.

Cincinnati, O.—For construction of sewers in East Third St. and Hamilton Ave., to Thomas Maloney, at \$5,059 and \$22,827 respectively, and for construction of main and lateral sewers and drains with appurtenances in Seitz, Dorsey and Goethe St., to Henkel & Sullivan Cincinnati, at \$11,912.

Marion, O.—Contracts for three sewers were let to Kohbarger & Hoyles at bids as follows: Lee St., \$3,205.36; Waterloo St., \$1,840.74, and Barks and Oak Grove Aves., \$5,887.66.

Springfield, O.—Contract for laying 1,020 ft. of sanitary sewer in Gallagher St. from Clifton to the first alley south of Liberty St., was awarded by the City Manager, acting under authority of the City Commission, July 26, to James Doyle at his lowest bid of \$994. Five bids were opened, as follows: M. J. Cooney, \$1,274; P. J. Caffrey, \$1,271; Smith & Wetzel, of Dayton, \$1,157; Phil' Huonker, \$1,320, and Doyle, \$994.

Sheboygan, Wis.—E. Aldag, Jr., Co. was awarded July 21 contract for construction of sewer in South Seventh St.

Sheboygan, Wis.—For sewers contract have been let as follows: Birdsall, Griffith Construction Co., Racine, Wis., for 11,043 ft. 8 to 12-in. vit. san. sewers. David Van Stella, for 2,810 ft. 10 to 24-in. vit. storm sewers. C. U. Boley is city engineer.

Watertown, Wis.—To Edward Bartlett for 2,500 ft. 10, 20 and 24-in. vitrified pipe sewer.

WATER SUPPLY.

San Diego, Cal.—Manager of Operation Lockwood urges erection of dam to impound four billion gallons of water at Barrett.

Cresco, Ia.—Bonds in sum of \$10,000 have been sold by Commissioners of Howard County for construction of water system.

Denison, Ia.—Time for receiving bids for drilling artesian well has been extended to Aug. 12. Bids received on July 22 were rejected. E. F. Tucker is City Clerk.

Shelby, Ia.—Sum of \$12,000 will be raised through bond issue for establishment of water plant.

Duluth, Minn.—Ordinance has been adopted to appropriate from public utility fund sum of \$2,000 for purpose of purchasing automatic district gas

governors for the water and light department.

Duluth, Minn.—Ordinance has been adopted to appropriate from public utility fund sum of \$3,000 for purchase of a 6 and 8-in. valve inserting machine and fifty 6-in. valves.

St. Cloud, Minn.—Plans for mains to be laid on 13th Ave. south between 1st St. south and 7th St. south and on 3d Ave. south between 7th and 8th St. were accepted with estimate of city engineer. The work will be started as soon as possible. A petition was received for water mains on 4th Ave. southeast from 1st St. southeast to 3d St. southeast and the engineer instructed to prepare plans.

Macon, Mo.—Macon will vote on proposition to issue \$30,000 worth of bonds to construct large filtration plant and to extend the water mains so as to serve entire town.

Camden, N. J.—Plans have been prepared for erection of auxiliary pumping station at Morris Station. Plans call for building in which two pumps, each with a daily capacity of 5,000,000 gals., will be installed.

Totowa, N. J.—Bids will be received by mayor and council of borough of Totowa, Passaic county, N. J., until 8.30 p. m., Aug. 9, at Borough Hall, for purchase of \$60,000 water bonds of said borough.

Centerville, N. Y.—Bonds in sum of \$35,000 have been sold for construction of water system.

Centerville, N. Y.—About to let contract for water works to cost about \$35,000. Includes 10,000 ft. 8-in., 4,700 ft. 6-in. pipe, and 26 fire hydrants.

Hudson, N. Y.—City is contemplating laying of water mains.

Lewiston, N. Y.—Plans are being prepared for water supply system to be constructed from proceeds of \$29,000 bond issue recently voted and soon to be sold.

Wellington, O.—Bonds in sum of \$35,000 for constructing water works system will be sold by J. B. Murray, village clerk.

Philadelphia, Pa.—Expenditure of \$30,000 is being considered for improvement of water supply of South Philadelphia to be devoted to construction of new valve boxes of concrete masonry.

Columbia, Tenn.—Board of Mayor and Aldermen have passed on first reading ordinances requisite for signing of contract with Columbia Water & Light Co.

Pateros, Wash.—Citizens have voted to issue \$7,200 of bonds for complete water system. W. H. Noble is town engineer.

Janesville, Wis.—At meeting July 20, Council adopted a resolution requiring laying of drains, water and gas pipes to the curb line on each side of South Bluff St.

Manitowoc, Wis.—City has rejected all bids for construction of water mains and will do the work by day labor.

Superior, Wis.—Better water supply is urged.

CONTRACTS AWARDED.

Clayton, Del.—For construction of water, sewer and disposal plants, to Ambler, Davis & Co., Philadelphia, Pa.

Grinnell, Ia.—Bash & Jones, a well known firm of contractors from Joplin, Mo., has been awarded contract for 35 blocks of new water main which city will need to clear way for paving already ordered or in prospect. The contract price is \$9,735.51, including both material and cost of installation.

Keota, Ia.—Bash & Jones, Joplin, Mo., have been awarded the contract to install the local water works system. The Des Moines Bridge & Iron Works, Des Moines, Ia., will furnish and construct the tank for \$2,550.

Marshalltown, Ia.—Lynchburg Foundry Co., Lynchburg, Va., is lowest bidder for furnishing city with water pipe, at \$23.85 per ton for 6, 8 and 12-in. pipe, and \$25.85 per ton for 4-in. pipe.

Larned, Kan.—For making improvements to water system, including motor-driven pumps, test boilers, steam and exhaust piping and auxiliary boiler room equipment, and constructing a stack to Merkle-Heines Machinery Co., at \$26,170.

Covington, Ky.—For furnishing city with 2,000 tons of 24-in. c-i. pipe for construction of emergency main from Ft. Thomas reservoir to Covington, to United States Cast Iron Pipe & Foundry Co., Addyston, O., at \$92,000.

Baltimore, Md.—The Westinghouse Electric & Machine Co., Pittsburgh, has secured the contract for furnishing and

installing a 20,000,000-gal. centrifugal pump, to be installed at the Eastern Pumping Station. Contract price, \$12,538.

Camden, N. J.—Another step toward getting proposed auxiliary pumping station at Delair in operation has been taken by Council's Water Committee when contract was awarded to Camden Iron Works for two 5,000,000 centrifugal pumps with Westinghouse motors. The price for the two is \$12,900.

Paterson, N. J.—As was expected, contract for construction of water system was awarded to McElligot & Chenswith of Nutley. This concern bid on proposal No. 3, for furnishing of labor, and on proposal No. 4, for furnishing all labor and material. Their proposal No. 4 was accepted, thereby necessitating letting of only one contract, under which all work will be done. McElligot & Chenswith's bid amounts to slightly less than \$50,000.

Lockport, N. Y.—Contract for drain and water pipe in Clinton St. was awarded F. J. Le Valley by the Common Council July 26 on his bid of \$2,650, lowest of three received for the work. The other bidders were the C. B. Whitmore Co., \$3,070, and the C. N. Stainthorpe Co., \$3,529.40.

New York, N. Y.—The John J. Hearn Construction Co., 67 W. 46th St., city, at \$10,362, for section 1; the Dellon Watkins Co., 147 Dumont Ave., Brooklyn, \$1,044, for section 3; awarded contracts for alteration and improvements at New Utrecht Pumping Station.

Rochester, N. Y.—By Board of Contract and Supply, for laying water mains to W. E. Kinney, Rochester, at \$10,556.

Schenectady, N. Y.—Contract to furnish two Venturi Meter Register-Indicator-Recorder instruments for \$750 was awarded July 28 by the Builders' Iron Foundry of New York City, this company being the only bidder.

Schenectady, N. Y.—The Venturi Department of the Builders' Iron Co., of Providence, R. I., secured the contract for the furnishing of two Venturi register indicator recorders at the price of \$375 each.

Lehigh, Okla.—To W. C. Swansick, Joplin, Mo., at \$38,600, for water works extensions for Lehigh.

Dallas, Tex.—Board of city commissioners awarded July 23 contract for 12,500 meters, as follows: 12,000 ½-in. Trident meters to Neptune Meter Co., 90 West St., New York City, and 300 ½-in. and 200 1-in. Lambert meters to Thompson Meter Co., 110 Bridge St., Brooklyn, N. Y.

Galveston, Tex.—Upon recommendation of Commissioner Chay, head of water works and sewer department, bid of U. S. Cast Iron Pipe & Foundry Co., being lowest of four bids submitted on certain materials to be purchased for water works department, was accepted. Materials include 200 tons of 6-in. cast iron pipe, 150 tons of 8-in. pipe, 18 8x8 tees and same number of 8x6 tees.

Powell, Wyo.—By City Council to J. E. Fisher, Denver, Col., at \$56,000 for water works system. Geo. H. Sethman is engineer, 250 Equitable building, Denver.

LIGHTING AND POWER

Pasadena, Cal.—Resolution of commission of Pasadena of its intention to order the construction and installation of posts, conduits, wires, lamps and other suitable and necessary appliances in, upon and along El Molino Ave. for purpose of lighting has been adopted.

Monroe, Ind.—Town trustees of Monroe have ordered election to be held Aug. 13 to ascertain whether or not majority favor erection of electric line from that town to Decatur for purpose of supplying electric power and lights.

Bancroft, Ia.—Citizens have voted in favor of issuing \$10,000 in bonds for construction of municipal electric light plant.

Riverton, Ia.—Electric light franchise proposition was carried by majority of ten to one. The Hamburg Electric Light Co. has started construction of transmission line and it is believed lights will be in use here by fall.

Sharon Springs, Kan.—Plans are under consideration for remodeling lighting plant. Estimated cost is \$10,000. W. E. Hulise & Co., Hutchinson, is engineer.

Lexington, Ky.—Plans have been prepared for Board of Commerce for installation of ornamental street-lighting system on principal streets and same will be examined by expert before work is started. Property owners will bear cost of installing system consisting of 97

standards carrying two lamps each, and city will maintain lamps and provide electricity for them.

Westfield, Mass.—The sum of \$25,000 was voted at special town meeting for extension and improvements at municipal lighting plant. This money will be borrowed and the bonds and interest paid from the earnings of the department. The expenditures will be as follows: Extension to gas holders and benches, \$6,500; new oil and storehouse, \$4,000; new coal trestle, \$3,000; new cable overhead and extension works, \$11,500.

Lansing, Mich.—Municipally-owned lighting plants in Michigan were given a boost when supreme court decided that they could embark in business of selling bulbs, electrical apparatus, electrical appliances, etc., and could wire houses as well.

Hardwick, Minn.—Citizens have voted \$5,000 in bonds for improving village power plant.

Grant City, Mo.—The proposition to light the streets of Grant City at \$1,200 per year carried at the special city election July 26 by vote of 22 to 252.

Pickering, Mo.—At a special election held July 27 the citizens decided to install a modern lighting system.

Santa Rosa, N. Mex.—Electric light and water works. Engineers, Burns & McDonnell, 821 Scarrit Bldg., Kansas City, Mo. Plans in progress.

South River, N. J.—A gas ordinance regulating laying of gas mains in streets of South River and sale of gas to citizens for domestic purposes was passed in its second reading.

Fredonia, N. Y.—Election to vote on lighting streets with nitrogen electric lamps is being considered.

Rochester, N. Y.—See "Miscellaneous."

Dunn, N. C.—Plans have been made for enlarging municipal electric station.

Marion, O.—City Council is considering petition asking for installation of ornamental lighting system (cluster lamps) on West Center St., from Oak to Davids St.

Jones, Okla.—Electric light plant and water works, \$10,000. Engineers, Benham Engr. Co., Oklahoma City. Will vote on a bond issue Aug. 17.

Washington, C. H., O.—H. Whitford Jones & Co., Citizens' Building, Cleveland, will prepare plans for new street-lighting system here.

Chambersburg, Pa.—Council has adopted a resolution for installation of conduits and cables for ornamental lighting system on section of Lincoln Way east, now being paved.

South Bethlehem, Pa.—Bids will be received by borough of South Bethlehem up to 8 p. m., Monday, Aug. 2, 1915, for lighting of streets of borough with arc and incandescent lights, and also for lighting a portion of certain streets with lights on iron standards.

Enosburg Falls, Vt.—Electric Light Commissioners are discussing installation of electric-light meters and reconstructing street-lighting system.

Chippewa, Wis.—Petition has been received asking for "white way" on River, Bay, Spring, Central and Bridge Sts.

CONTRACTS AWARDED.

Edwardsville, Ill.—Contract for lighting fixtures for new court house was awarded July 21 to Gloss Chandelier Co. of St. Louis, the amount being \$6,000.

Thompson, Ia.—For construction of electric light plant, to Strong Electric Co., Des Moines.

Gaylord, Kan.—To Renfro & Lewis, Denison, Ia., at \$6,672.50, for electric light plant for Gaylord. S. R. Stephenson, mayor.

Larned, Kan.—To McCoy & Taylor, at \$12,120, for electric light plant, including power station, fdns., extension on wells and coal sheds. Worley & Black, engrs., Reliance bldg., Kansas City, Mo.

Newark, N. J.—By Public Service Electric Co., contract for construction of smoke flues at its new power plant at Point-No-Point, to Stevens-Aylesworth Co., 90 West St., New York, N. Y. Estimated cost \$12,250.

New Lebanon, O.—To Ohio Electric R. Co. contract for lighting streets, avenues, alleys, lanes and public places with electric light for period of 10 years.

Steubenville, O.—The Steubenville & East Liverpool Railway & Light Co. has made only bid for city and private lighting in this city. It is for ten years and they will be given contract by council. New contract means a 15 per cent reduction in city, commercial and residence lighting. They also bid low to the city on new nitrogen lamp system

of city lighting. Arc city lamps were reduced from \$62 to \$55.

FIRE EQUIPMENT

New Britain, Conn.—Board of Public Safety may shortly recommend to Council purchase of motor apparatus.

Stamford, Conn.—Purchase of motor ladder truck is being planned.

Terryville, Conn.—Purchase of motor pumping engine is being considered. Funds are now being raised for same.

New Castle, Del.—Effort is being made to secure a 3-in-1 modern automobile fire apparatus.

Fort Wayne, Ind.—Board of Safety Budget for 1916 includes: A motor combination pump and hose wagon, a special tractor for the aerial truck, and auto truck for the alarm department.

Cumberland, Md.—Citizens of Westernport and Luke, Md., and Piedmont, W. Va., and the three towns lying at junction of Potomac River and Georges Creek, at citizens meeting decided by unanimous vote to purchase motor fire truck for use of three towns.

Haverhill, Mass.—Purchase of necessary fire equipment is urged.

Leicester, Mass.—Town may purchase 1,000 ft. of hose and extension ladders.

Aberdeen, Miss.—Appropriation of \$4,000 has been voted for purchase of a motor combination chemical and hose wagon.

Beatrice, Neb.—Commissioners have provided in annual estimate for purchase of piece of motor apparatus.

Omaha, Neb.—City contemplates installation of new alarm system. Estimates are being prepared by Chief Salter.

Omaha, Neb.—City Council has approved its 1916 budget, which includes special fire fund of \$66,500 for motorizing the department and installing a new fire alarm system.

Haddonfield, N. J.—Haddonfield is one of the latest Jersey communities to decide upon purchase of up-to-date fire apparatus. The Haddon Fire Company is about to spend \$5,000 in purchase of new combination motor truck.

Ridgefield, N. J.—Council is planning the installation of fire alarm system.

Totowa, N. J.—Council is considering purchase of fire apparatus, about 1,000 ft. of hose, and reels to carry same.

Eaton, O.—Final action upon resolution providing for purchase of motor fire truck has been taken by City Council and contract will be entered shortly with the Seagraves Motor Co. of Columbus for combination hose and chemical truck costing \$4,995.

Conshohocken, Pa.—Council has voted to purchase 1,300 ft. of hose. Miles Stemple is Chief.

Edwardsville, Pa.—City Council has passed an ordinance appropriating \$15,000 for the purchase of two fire trucks.

Farrell, Pa.—Bond issue of \$50,000 has been approved, part of which will be used for motorization of department.

Reading, Pa.—Committee has been appointed to secure prices on motor chemical apparatus for Friendship Fire Company. O. I. Eck is president.

Swarthmore, Pa.—Purchase of motor combination chemical and hose wagon is being urged.

Temple, Tex.—City council has awarded block of fire department equipment and improvement bonds to N. W. Halsey & Co. of Chicago, issue amounting to \$40,000. The proceeds will be used to build two substations and entire department will be thoroughly equipped with modern apparatus. A fire alarm system will also be installed.

Bridgeport, W. Va.—Appropriation has been voted for purchase of new hose, ladders, etc., and is considering installation of alarm system.

Chatham, Ont.—Taxpayers have authorized purchase of \$13,500 worth of motor apparatus. R. Pritchard is Chief.

CONTRACTS AWARDED.

Muncie, Ind.—The Board of Safety has awarded the contract for the motorization of No. 1 station to the Robinson Motor Fire Apparatus Manufacturing Co. of St. Louis, Mo., at a total price of \$12,825. The contract calls for one triple combination wagon, consisting of engine, hose and chemical, and also for a tractor for the large aerial truck now in use at No. 1 station. The combination wagon cost \$8,550 and the aerial truck tractor cost \$4,275.

Everett, Mass.—To Seagrave Co., Columbus, O., for furnishing motor triple combination wagon.

Johnstown, Pa.—Council has signed contract with representatives of Jas. Boyd Co. of Philadelphia for new auto fire truck, to be delivered within 90 days. The contract price was \$7,500.

Ogden, Utah.—To American-La France Fire Engine Co., Inc., Elmira, N. Y., for furnishing motor combination chemical and hose wagon at \$3,950.

Martin's Ferry, W. Va.—For two Ahrens-Fox combination hose and chemical cars with booster pump.

De Pere, Wis.—Contract for hose may be divided between the Chicago Fire Hose Co., Chicago, Ill., and the Eureka Fire Hose Co., New York, N. Y.

BRIDGES

Sacramento, Cal.—A group of Sacramento business men who own land in vicinity of Nicolaus, Sutter county, which rapidly is developing into important fruit center, are making effort to have Sutter county supervisors build a \$50,000 bridge across the Feather river at Nicolaus.

Washington, Ind.—County is preparing plans for the following steel bridges: One 60-ft. steel span bridge; four 25 to 30-ft. steel span bridges. Reinforced concrete, abutments and floors. Will advertise for bids latter part of next month.

Lawrence, Kan.—Plans for new bridge across Kaw have been completed by consulting engineers, Hedrick and Cochran, and as soon as State Utilities Commission has placed its seal of approval on papers bids will be advertised for.

Meridian, Miss.—Bond issue of \$15,000 has been voted for bridges and drainage.

Maryville, Mo.—Special election may be called for voting on bridge improvement bonds.

Somerville, N. J.—The Somerset county board of chosen freeholders has ordered another bridge built on second section of Greater Crossroads Road, in Bedminster township. Bids will probably be received for proposed bridge in September.

Brooklyn, N. Y.—Plan to move Meeker Ave. bridge over Newtown Creek several hundred feet upstream is favored in report which committee on city plan will submit to board of estimate. Bridge Commissioner Kracke has prepared plans for building of new bridge across Newtown Creek at this point and has applied to board of estimate for appropriation of \$300,000 for that purpose.

Cincinnati, O.—City and Pennsylvania R. R. Co. will unite in constructing viaduct to cost about \$450,000.

Cleveland, O.—Resolution has been adopted authorizing bond issue of \$100,000 to provide for engineering surveys and options on property for proposed bridge over Cuyahoga River to connect Loraine Ave. either with Huron Rd. or Bolivar Ave. Estimated cost is \$5,000,000.

Tulsa, Okla.—Advertisements for bids for contract for construction of new road bridge across Arkansas river, for which purpose \$200,000 in bonds were voted by taxpayers of Tulsa county, were ordered by board of county commissioners through County Clerk Cline. Bids are to be opened Aug. 26 before board of commissioners and bids will be received until 10 o'clock. Bridge is to have a 30-ft. roadway with two 4-ft. sidewalks and will have 18 arch spans 78 ft. long. The structure is to be of reinforced concrete and the roadway paved with either asphalt or wood blocks. One street railroad track will run across the bridge. It is estimated that 9,800 cu. yds. of concrete will be used and that it will require approximately 270 tons of reinforcing steel. Separate bids will be received for the concrete construction and for the paving and street railroad track. Plans and specifications may be obtained from Harrington, Howard & Ash of Kansas City, consulting engineers.

Covington, Tenn.—Appropriation of \$20,000 has been voted by Tipton County Quarterly Court toward erection of bridge across Big Hatchie River.

Dallas, Tex.—New bridge to be built over Trinity River at Commerce St. as result of favorable vote on \$135,000 county bond issue, will probably be completed and ready for public use within a year. J. F. Wilt is County Engineer.

Green Bay, Wis.—Citizens have voted against issuing \$5,000 in bonds for construction of bridge over East River at Pleasant St.

Lake Geneva, Wis.—City is advertising for bids to build reinforced concrete bridge to cost \$2,300. Bids to be received not later than Aug. 17, 1915.

CONTRACTS AWARDED.

Marysville, Cal.—County Supervisors have awarded contract for construction of the following bridges on State highway between Morrison and Wheatland to Jenkins & Wells, Sacramento; Best Creek bridge, \$3,844; Dry Creek bridge, \$7,444; Grasshopper Creek bridge, \$2,928.

Rockford, Ill.—To G. Hohn, Rockford, contract for construction of three bridges as follows: Kishwaukee St. bridge, \$8,870; 10th St. bridge, \$3,590; 11th St. bridge, \$3,540. Edwin Main is City Engr.

Council Bluffs, Ia.—Contracts for bridges were let as follows: Lana Construction Co., 202-3 City Natl. Bank bldg., Council Bluffs, at \$6,095. Elkhart Bridge & Iron Co., Elkhart, Ind., at \$3,300. J. D. Hanna, auditor Pottawatomie Co.; H. M. Howard, engineer, Court House.

Radcliffe, Ia.—To N. M. Stark Co., Des Moines, at \$11,777, for construction of eight bridges, by County Board of Supervisors.

Holton, Kan.—By Comrs. of Jackson Co. to E. C. Gray, 2629 Monroe St., at \$3,726, for three reinforced concrete and steel bridges.

Newton, Kan.—County Commissioners have awarded contract for concrete bridges to be erected in Garden, Halstead and Newton townships to Haeny Construction Co. for lump sum of \$3,786. The contract for pile bridges in Richland and Alta townships was let to B. H. Northcott for lump sum of \$1,080.

Baltimore, Md.—State Roads Commission, O. E. Weller, chairman, 601 Garrett bldg., let contract to A. J. Boyle, Lanvale and Pulaski Sts., at \$24,706, for bridge over Patapsco river, nr. Elkridge, on Baltimore and Washington Blvd.; also let contract to Annapolis, Dredging & Pile Driving Co., Annapolis, Md., at \$2,573.39, to repair Chester river bridge, connecting Queen Anne and Kent counties.

Morristown, N. J.—At meeting of joint committee of Union county board of freeholders and Morris county board of freeholders, held July 26, contract for construction of bridge on Springfield Ave. over Passaic river, at Berkeley Heights, was awarded to Philip A. Hickey of Somerville at \$7,333.

Pine Brook, N. J.—By Board of Chosen Freeholders of Morris and Essex Counties, for construction of bridge over Passaic River at Pine Brook, to Averill-Matthews Co., Clinton St., Newark, at \$39,860.

Utica, N. Y.—By Dept. of Pub. Wks. to W. F. Cagley for an 180-ft. span plate-girder bridge, with 42-ft. roadway, to cost \$80,000.

Ironton, O.—By County Commissioners for construction of bridge across Ice Creek at Coal Grove, to Capital Bridge Co., at \$19,112.

Vernon, Pa.—There will be considerable bridge building in Vernon Township this summer, contracts for three concrete bridges reinforced with iron having just been awarded. The Scowden Bros. firm, of Meadville, will build bridge over Van Horne Run, while for Onspaugh and Sterling bridge abutments same firm was successful. P. H. Kinston, of Vernon Township, was awarded contract for building bridge over Van Horne Run, 4 miles west of Meadville, while Muddy Run bridge will also be built by Mr. Kinston.

Brantford, Ont.—Following contracts have been awarded by County Commissioners for construction of two steel bridges, 60-ft. spans, 16-ft. roadways on reinforced concrete abutments: Substructure to Geo. Thompson, city, at \$3,000; superstructure to Hamilton Bridge Co., Hamilton, Ont., at \$2,687. A. M. Jackson, County Engineer, Temple Bldg., city.

MISCELLANEOUS

Anaheim, Cal.—Election will be held soon to vote bonds to extent of \$36,000 for new city hall.

Fresno, Cal.—Election will shortly be held to vote on question of issuing \$50,000 in bonds for construction of incinerator.

Gainesville, Fla.—City is considering construction of garbage incinerator.

Palm Beach, Fla.—Bids will be received by the Florida East Coast Hotel Co., at Palm Beach, Fla., on the following: 5,000 to 15,000 cu. yds. rock excavation; 30,000 to 80,000 cu. yds. muck and sand excavation; 160,000 cu. yds. hydraulic sand fill (suction work). For

full particulars consult J. R. Brooks, engineer in charge at Palm Beach, Fla.

Council Bluffs, Ia.—The joint drainage board of Harrison-Pottawattamie district has advertised for bids for work on two projects in joint district to be opened at Council Bluffs, July 26. Work consists of widening and deepening the Willow Creek ditch for distance of 6.6 miles from its junction with Boyer ditch. Maps, specifications and profiles are on file in offices of auditors of both counties, and work must be commenced by successful bidder by August 15 and completed before Feb. 1, 1916. The second project covers large amount of work in Noble's Lake district and the Wilson ditch, and includes quantity of tile drainage and open laterals. This project must be commenced by Aug. 15 and completed by October 1.

Paducah, Ky.—Road committee has recommended purchase of ten-ton gasoline road roller.

Menominee, Mich.—City of Menominee is considering establishment of city market and erection of city dock.

Meridian, Miss.—City hall furnishing bonds in sum of \$16,000 have been voted.

Paterson, N. J.—New water cart is to be purchased by county. Freeholder Mason having made a motion that this be done. The new water wagon is to have motor attached for pumping the water and the engineer will solicit bids.

Albany, N. Y.—Bids were opened July 27 by State Architect Pilcher for reconstruction of the old State Hall into home for Court of Appeals. Feeney & Sheehan were low for general construction, at \$162,000; Edw. Joy Cap, of Syracuse, heating, \$4,894, and electric work, \$9,753; J. R. Sheehan, Schenectady, \$13,911, and Otis Elevator Co., Yonkers, elevators, \$6,446.

Endicott, N. Y.—Municipal building to cost \$4,000 will be erected.

New York City, N. Y.—Public service commission opened bids July 28 for construction of that part of Eastern Parkway subway in Brooklyn extending from point near Church Ave., under Nostrand Ave., to Flatbush Ave. There were ten bidders, the Dock Contractor Co. offering the lowest figure, \$1,700,000, while John J. Creem's offer, at \$2,800,000, was the highest. Plans call for two-track subway, with stations at Beverly Road, Newkirk Ave., and Flatbush Ave.

New York City, N. Y.—Bids were opened July 28 for supply of rail splice bars, anti-creeper and nut locks for equipment of about 230 miles of single track of dual system roads. Ten bids were received. That of Dock Contractor Co. of Hoboken, N. J., was lowest, \$1,700,000. Among Brooklyn bidders were Newan & Carey Co., \$2,153,000; John J. Creem, \$2,800, and the D. Donegan Co., \$1,845,000.

Rochester, N. Y.—Authority to issue city note for \$150,000 to be used for river deepening was given Comptroller Edw. S. Osborne by common council.

Rochester, N. Y.—Following final ordinances have been adopted: Additional lighting for Commercial St., estimated cost, \$912.50; Brown St., \$1,191; Jones St., \$862.75; Frank St., \$1,003; South Ave., Court St. to Erie Canal, \$821.25; Granger Pl., asphalt pavement, \$13,000; additional lighting, Arnold Park, \$408; Alvin Pl., brick pavement, \$2,700; Suter Terrace, asphalt pavement, \$3,400; Wilmington St., sewer, \$900; Clinton Ave., sanitary and storm water sewer, \$4,000; Hollenbeck St., sanitary and storm water sewer, \$8,500; Ellicott St., asphalt pavement, \$20,000; Snyder St., grading and walks, \$4,000; Dalmaine Crescent, grading and walks, \$7,000; Blakeslee St., extension, \$2,000; Yates St., extension, \$2,000; Gray St., extension, \$2,000.

Schenectady, N. Y.—Secretary of Board was authorized to advertise for bids for 6,000 gallons of gasoline for use at garbage reduction plant, bids to be opened Aug. 11.

Columbus, O.—Bids will be received by Director of Public Safety until noon, Aug. 6, for two new motor-driven patrol wagons for Division of Police.

Columbus, O.—The Franklin County Flood Conservancy Commission has decided to extend district, which now includes only Franklin county, both up and down the Scioto, including perhaps Pickaway, Delaware, Marion, Union and Hardin counties, if people of those counties in view of disastrous floods of last two weeks, are inclined to co-operate. Commissioners have employed engineering firm of Alvord and Burdick of Chicago to supervise the work here. These engineers will make new survey of entire flood district with view to adopting impounding dam plan that is principal

feature of Miami River Conservancy plan.

Toledo, O.—Resolution has been adopted authorizing Director of Public Safety to purchase a 2-ton truck for use in Dept. of Fire and Police Alarm Telegraph.

Fleetwood, Pa.—Town Council is considering an ordinance which will ask voters to approve a loan of \$50,000 for purpose of building a new town hall and fire house, improve the reservoir and streets and make a topographical survey of the town.

Harrisburg, Pa.—State Highway Commissioner Cunningham has sent out advertisements inviting bids for furnishing automobile plates, dealers' plates, trailer plates, truck plates, traction engine plates, motorcycle plates and licensed automobile drivers' badges. These bids will be opened Aug. 10. About 349,599 individual plates may be required.

Pittsburgh, Pa.—Ordinance will be introduced at next meeting for a \$90,000 bond issue for garbage disposal plant.

Wormleysburg, Pa.—At meeting of citizens of this place it was unanimously decided to bond borough for \$3,000 and devote proceeds for building of town hall.

Orange, Tex.—Bond issue of \$150,000 has been voted for wharf and dock purposes.

Brigham City, Utah.—The election held in the Corinne Drainage district recently to determine whether or not bonds in the sum of \$175,000 should be sold for the purpose of reclaiming by drainage about 12,000 acres of land, went unanimously in favor of issuing the bonds.

Racine, Wis.—Steps are being taken towards placing of wires of police and fire department signal system underground.

Racine, Wis.—Purchase of motor truck has been authorized by County Board of Supervisors.

CONTRACTS AWARDED.

Augusta, Ga.—The finance committee of Council on July 22 opened proposals on new wharf terminals, canvassed bids and awarded contract to lowest bidder—the Georgia Contracting Co., at \$27,958.16. There were five bids. The highest bid was \$48,500.

Annapolis, Md.—Contract for needed improvements to Alms House was awarded to Charles A. Howard, of Annapolis. Howard offered to do whole work, including both heating plant and installation of the windmill water system for \$1,289, of both divisions of contract were given him. His bid on two items separately was \$699 for the windmill and water system, and \$625 for the heating plant.

Greenville, Miss.—Contract for levee work to cost \$400,000 has been awarded to Bondurant Construction Co., of Hickman, Ky.

Cape Girardeau, Mo.—The Northern Const. Co. of Elkhart, Ind., through its field manager, A. W. Naylor, being lowest and best bidder for construction of drainage district No. 10, was awarded contract at total figure of \$76,092.72, which includes the building of the bridges necessary also. The Harviell ditch, with its laterals, will have excavation of 696,625.15 cu. yds. of earth. The estimated cost of constructing same is \$70,111.40, and the contract was let for \$42,215.47, a saving of \$27,895.93. In Neelyville ditch, with its laterals, there are 324,982.24 cu. yds. of excavation; estimated cost, \$31,685.80, which was taken for \$22,582.25, a saving in this item of \$9,103.55. Estimated cost of bridges on both ditches was \$13,855 and the contract was let for them at \$11,295, a saving in this item of \$2,560, or a total on the entire job of \$39,558.53.

Brooklyn, N. Y.—Public Service Commission has awarded contract for construction of Section No. 1 of Route No. 49, the Culver Rapid Transit Railroad, in Brooklyn, to Post & McCord, Inc., the lowest bidders, for \$877,959. Section No. 1 extends from 37th St. over Gravesend Ave. to 22d Ave. The contract for Section No. 2, extending from that point to Ave. X, was awarded a short time ago to the Oscar Daniels Co.

New York City, N. Y.—Firm of Holbrook, Cabot & Rollins, Inc., is lowest bidder at \$3,741,000 for Broadway subway, Section No. 3 of Routes 4 and 36, and firm of Rogers & Hargerty, Inc., is lowest bidder on East Parkway contract, Section No. 3 of Route No. 12, Brooklyn, at \$2,170,000.

TOO LATE FOR CLASSIFICATION

BIDS ASKED FOR

STATE	CITY	REC'D UNTIL	NATURE OF WORK	ADDRESS INQUIRIES TO
STREETS AND ROADS				
Minn.	Ely	Aug. 10	Constructing sidewalks and gutters and doing other street work	City Engineer.
Wis.	Oshkosh	Aug. 11	Constructing a large amount of sidewalk	R. A. Hollister, Chr. B. P. W.
Md.	Hagerstown	Aug. 13	Constructing 2.41 miles of county road	B. M. Hartle, Co. Clk.
O.	Bowling Green	2 p.m., Aug. 16	Grading, draining, macadamizing and applying bituminous binder	L. H. Wismar, Co. Surv.
O.	Columbus	Noon, Aug. 17	Grading, draining and paving with brick, wood block or asphalt several streets	Geo. A. Borden, Dir. P. W.
O.	Columbus	10 a.m., Aug. 23	Improving and macadamizing several roads	John Scott, Clk. of Board.
SEWERAGE				
Okla.	Tulsa	5 p.m., Aug. 9	Constructing complete sanitary sewer system	T. C. Hughes, City Engr.
N. J.	Irvington	8 p.m., Aug. 11	Laying 530 ft. 8-in. vit. pipe and placing two manholes	I. J. Casey, Town Engr.
Minn.	Winnebago	8 p.m., Aug. 16	Constructing branch sewer	H. W. Holley, Engr.
WATER SUPPLY.				
Ia.	Neola	Aug. 10	75,000 gal. steel water tank	P. J. Doyle, Town Clk.
Wis.	Oshkosh	2 p.m., Aug. 12	3,800 ft. wrought iron pipe	R. A. Hollister, Chr. B. P. W.
Tenn.	Columbia	Aug. 15	Installing 1,000,000 gallon filtration plant, new hydrants, pipe and mains	J. S. Robinson, Sec. Water & Light Co.
O.	Sylvania	Noon, Aug. 20	Drilling well and constructing water works	Geo. Cook, Vil. Clk.
FIRE EQUIPMENT				
Okla.	Boswell	Aug. 12	Furnishing hose, hose carts and other equipment	Board of Trustees.
N. J.	Guttenberg	Aug. 16	1,000 ft. cotton hose	W. J. Bramley, Town Clk.
BRIDGES				
Cal.	Redding	Aug. 21	Constructing steel or concrete bridge 260 ft. long	County Supervisors.
Cal.	San Jose	11 a.m., Aug. 23	Constructing 2-span girder bridge	H. A. Pfister, Clk. of Supv.
Tex.	Terrell	2 p.m., Aug. 26	Constructing culverts and bridges	M. W. Raley, Sec. Bd. Rd. Com.
O.	Bowling Green	1 p.m., Aug. 31	Creosoted wood block floor on bridge	C. E. Steinbaugh, Co. Aud.
O.	Toledo	10 a.m., Sept. 3	Creosoted wood block floor on bridge	C. J. Sanzenbacher, Co. Aud.
MISCELLANEOUS.				
Ill.	Springfield	3 p.m., Aug. 16	Removing old boilers and installing new one at State Hospital at Menard	Board of Administration.

STREETS AND ROADS

San Diego, Cal.—City will readvertise for bids for grading and resurfacing streets, for which bids were recently rejected.

Stockton, Cal.—City plans to improve portions of several streets by paving with asphalt macadam.

Manatee, Fla.—City is advertising for sale \$250,000 bonds, proceeds of which will be devoted to road and bridge construction.

Greencastle, Ind.—City is negotiating for loans for \$7,500. Money will be used in repairing streets and purchasing steam roller.

Colby, Kan.—Movement is under way to pave 2,600 ft. of streets with asphalt.

Leavenworth, Kan.—Ordinance has been passed providing for regrading and paving with brick and concrete of several streets, also curbing.

Brookston, Minn.—At special election held July 26 proposition for issuing \$5,000 bonds for roads was defeated.

Duluth, Minn.—City will pave several streets, but type of surfacing has not been selected as yet.

Duluth, Minn.—Bids were opened July 30 for construction of 2½ miles of county highway. William Kusiel was low bidder at \$2,064.70. Other bids were: Elmer Swanson, \$2,754.25; Axel Hagstron, \$2,985.50.

Far Hills, N. J.—Work has been authorized on the 2.67-mile road to Gladstone and Pottersville, but construction will not start for some time.

Herkimer, N. Y.—Proposition before Council to apply oil to certain streets to eliminate dust.

Coshocton, O.—City has adopted resolution ordering paving of East Main St. with brick, setting curbs and constructing drains and catch basins. Part of the cost will be paid by means of a bond issue.

Niles, O.—Bids will be received until 2 p. m., August 23, by Homer Thomas, city auditor, for the purchase of bonds in sum of \$12,000, proceeds of which are to be devoted to paving streets.

Youngstown, O.—Bids will be received until noon, August 16, for purchase of \$9,375 of bonds, proceeds of which will be used in constructing and improving

county roads. F. H. Vogan is Clerk of County Commissioners.

Johnstown, Pa.—Bids are being received on \$100,000 highway bonds.

Titusville, Pa.—Council has ordered street to be extended and paved, drained and graded.

Columbia, Tenn.—Bonds for street paving have been sold to Southern Asphalt & Construction Co. Contract for paving, gutters and placing curbs has been sub-let to J. F. Nicholson Construction Co. of Columbia.

Ogden, Utah.—City Board of Commissioners have passed an ordinance providing for sidewalk construction in several streets.

Tacoma, Wash.—City has decided to pave O St., between 6th Ave. and 11th St. The cost is estimated at \$11,000. Work will be finished before autumn.

CONTRACTS AWARDED.

Los Angeles, Cal.—Council has awarded contract to H. O. Withers for paving and otherwise improving street at following prices: 2 cts. per sq. ft. for grading to sub-grade; 15½ cts. per sq. ft. for Warrenite paving; 31 cts. per sq. ft. for vitrified brick paving; 30 cts. per sq. ft. for granite block repaving; 14 cts. per sq. ft. for concrete paving; 15 cts. per sq. ft. for asphalt repaving; 30 cts. per lin. ft. for cement curb, Class A; 42 cts. per sq. ft. for granite block gutters; \$185 for storm drain and appurtenances, complete; 10 cts. per sq. ft. for Warrenite wearing surface and asphaltic cement paint binder course laid on existing gutter.

Peoria, Ill.—Highway Commissioners awarded contract to R. A. Cullinan at \$1,149 for constructing steel concrete bridge.

Oskaloosa, Ia.—Contract for 1,900 yds. of brick pavement awarded by city to Burlington Construction Co., at \$2.02 per yard.

Butte, Mont.—Contract has been awarded to J. C. Maguire for paving alleys with bitulithic, price \$38,514.

Haddonfield, N. J.—Commissioners have awarded the contract to surface the streets to Mainwaring and Cummins.

Albany, N. Y.—Following are 3 lowest proposals received by the State Highway Commission at its office, No.

55 Lancaster St., Albany, N. Y., for the repair of the following highways by State aid on Tuesday, August 3, 1915: Repair Contract No. 825, Broome Co., 1.76 miles; Chas. E. Haney, Camillus, N. Y., \$12,690.40; Port Jervis Const. Co., Port Jervis, N. Y., \$13,386.85. Repair Contract No. 820, Chemung Co., 2.35 miles; Frank K. Liberatore, Elmira, N. Y., \$12,198; John C. Bradley, Corning, N. Y., \$13,532; Chas. E. Haney, Camillus, N. Y., \$13,528.50. Repair Contract No. 830, Chenango Co., 3.55 miles; Smith & Stoll, Port Crane, N. Y., \$13,391.70; Paddelford & King, Sherburne, N. Y., \$14,441.45; Chas. E. Haney, Camillus, N. Y., \$14,614. Repair Contract No. 822, Clinton Co., 1.99 miles; James Conway, Plattsburgh, N. Y., \$7,806.24; A. Florentine & Son, Plattsburgh, N. Y., \$7,863.12; Richard Hopkins, Troy, N. Y., \$7,972.84. Repair Contract No. 816, Columbia Co., 9.26 miles; Olin T. Benedict, Pittsfield, Mass., \$15,426.50; Crowe & Walsh, Pittsfield, Mass., \$16,499.75; William Doyle, Saugerties, N. Y., \$16,833.50. Repair Contract No. 834, Dutchess Co., 4.12 miles; Henry Clinton, Poughkeepsie, N. Y., \$12,950; Thos. H. Karr, Troy, N. Y., \$14,495; Conway Bros. & Kennedy, Eddyville, N. Y., \$14,793. Repair Contract No. 827, Putnam and Dutchess Cos., 13.47 miles; Thos. H. Karr, Troy, N. Y., \$9,938.25; R. B. Strang, Cold Springs, N. Y., \$9,996.20; Edward Hartney, Modena, N. Y., \$10,713.20. Repair Contract No. 828, Erie Co., 0.87 mile; Union Paving Co., Schenectady, N. Y., \$13,503; Langan Const. Corp., Albany, N. Y., \$13,594; J. F. Driscoll, Buffalo, N. Y., \$15,252. Repair Contract No. 819, Herkimer Co., 5.46 miles; R. D. Cooper, Little Falls, N. Y., \$6,715.09; Richard Hopkins, Troy, N. Y., \$7,482.91; Newport Const. Co., Herkimer, N. Y., \$7,852.91. Repair Contract No. 637, Monroe Co., 0.56 mile; Crouch Bros., Rochester, N. Y., \$12,377; Whitmore, Rauber & Vicinus, Rochester, N. Y., \$12,412.95; Morrison & Quinn, Inc., Rochester, N. Y., \$12,867.30. Repair Contract No. 817, Montgomery Co., 10.91 miles; Charles Scott, Fort Plain, N. Y., \$4,004.32; Nash & Griffin, Norwich, N. Y., \$4,248.52; John P. Dugan & Co., Amsterdam, N. Y., \$4,400.97. Repair Contract No. 823, Otsego Co., 1.88 miles; Newport Const. Co., Herkimer, N. Y., \$19,192.73; Fulton Eng. Co., Inc., Albany, N. Y., \$19,992.23; Michael O'Brien, Cortland, N. Y., \$20,595.45. Repair Contract No. 818,